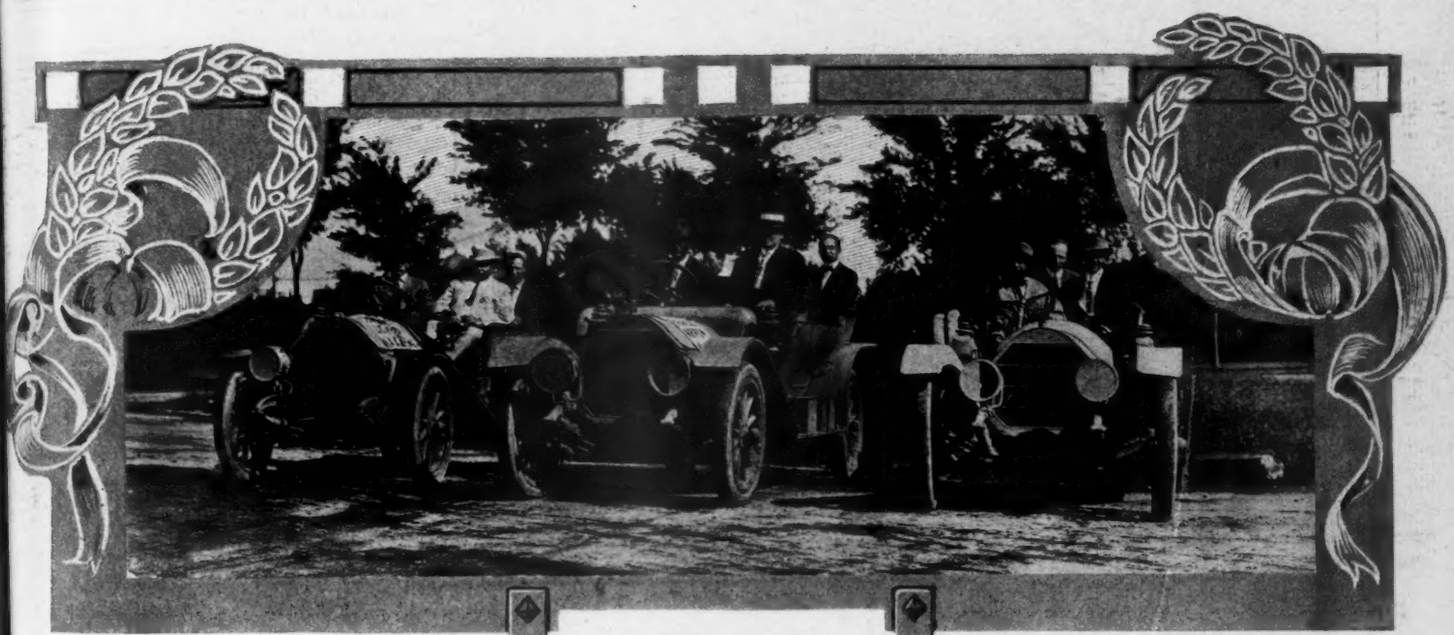
VOL. XVI, No. 6 CHICAGO, AUGUST 5, 1909 $3.00 PER YEAR

MOTOR AGE

WINCHESTER IN PIERCE-ARROW WINS GLIDDEN



BEMB IN CHALMERS, WINCHESTER

GLIDDEN TROPHY

1. W. F. Winchester, Pierce.	0
2. H. Hammond, Premier....	1.5
3. F. S. Dey, Pierce	1.6

HOWER TROPHY

1. J. S. Williams, Pierce.....	0
2. J. A. Wicke, Moline.....	1.1
3. J. C. Moore. Lexington	3.8

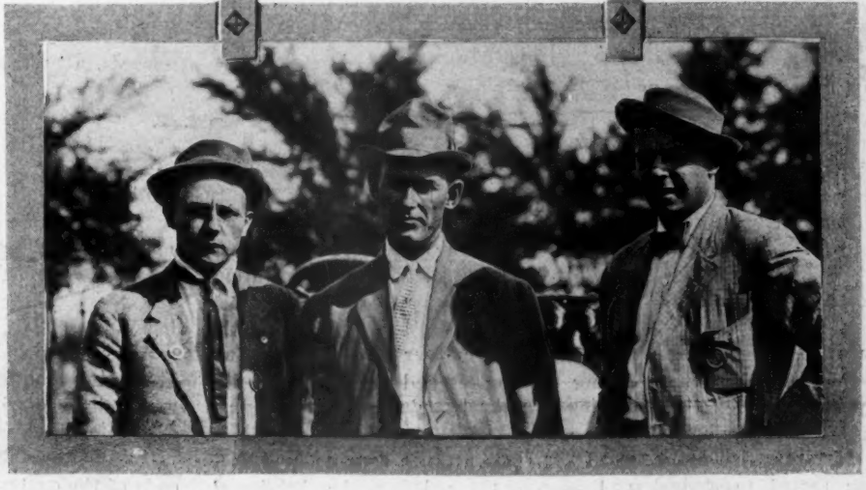
DETROIT TROPHY

1. Jean Bemb, Chalmers.....	23.8
2. C. Waltman, Premier	34.3
3. W. A. Wood. Am. Simplex.	52.2

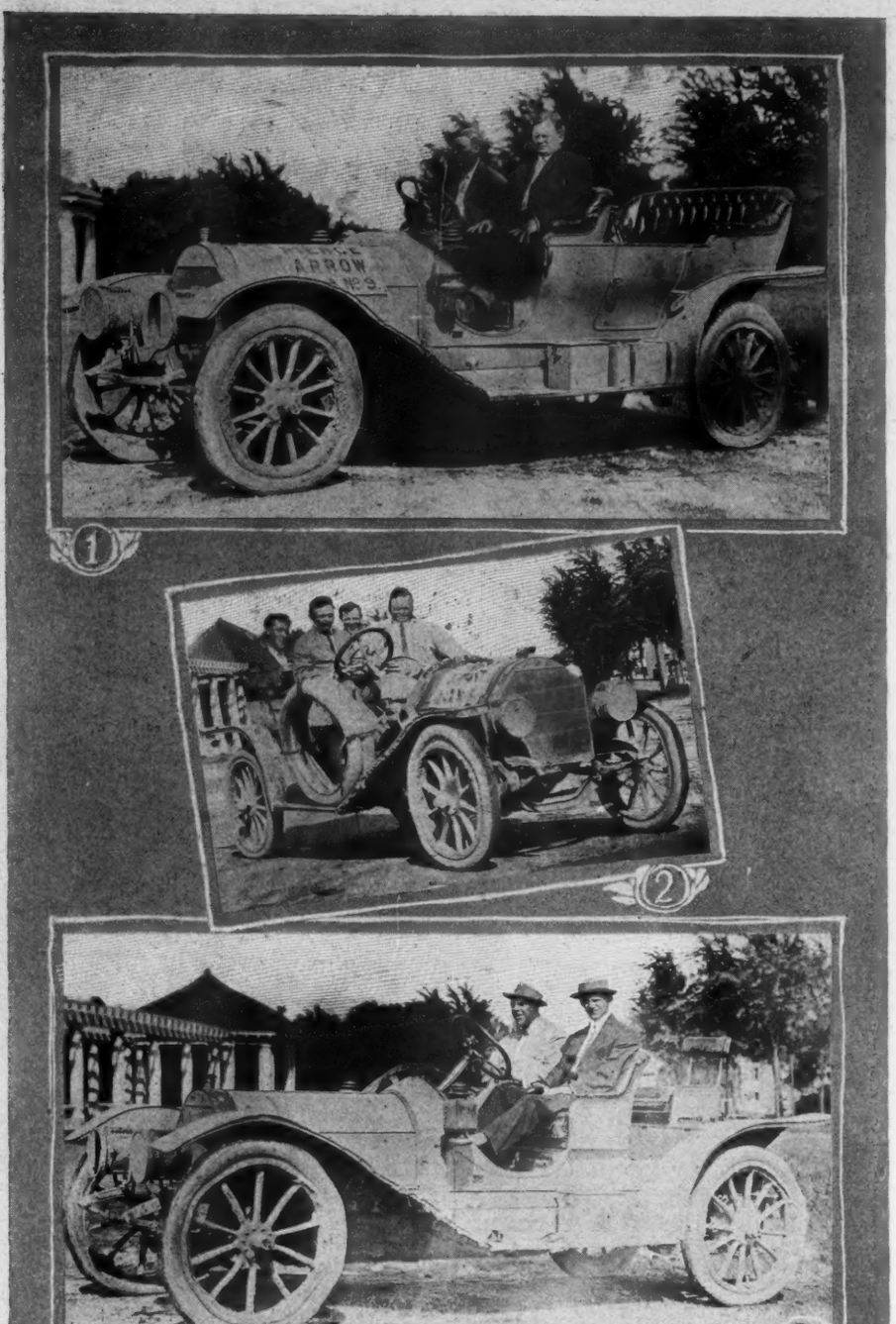
IN PIERCE AND WILLIAMS IN PIERCE

KANSAS CITY, Mo., Aug. 1, 1909—The honor of winning the Glidden trophy for 1909 has been carried off by Walter F. Winchester driving a six-cylinder 48-horsepower Pierce-Arrow touring car, this being the only entrant of the thirteen Glidden contestants to have a perfect score at the end of the technical examination which was carried on in Convention hall here yesterday and today. Winchester was one of five Glidden cars to finish with perfect road scores after 2,640 miles of road work between Detroit and here, but all of the other cars lost points on the final inspection by the technical committee. This was Winchester's first experience as a contestant in a Glidden tour, although he has driven a touring car in it twice.

Second honors in the Glidden contest went to Harry Hammond, driving Premier car No. 2, which finished the road work here with a perfect score but suffered 1.5 points penalty in the technical examination. Third honors went to F. S. Dey, driving Pierce-Arrow No. 8, which finished with a perfect road score but lost 1.6 point on the technical examination. Of the thirteen Glidden contestants which started from Detroit, two fell out by the wayside, leaving but eleven to enter this city tonight. Of these eleven five came in with perfect road scores, these being No. 9 Pierce-Arrow, driven by W. F. Winchester; No. 2 Premier, H. Hammond; No. 8 Pierce-Arrow, F. S. Dey; No. 5 Marmon, H. C. Marmon, and No. 1 Premier, Webb Jay. The complete Glidden



THE THREE WINNERS—JEAN BEMB, W. F. WINCHESTER AN D J. S. WILLIAMS



THE THREE VICTORIOUS MOTOR CARS
1—Winchester's Pierce, 2—Bemb's Chalmers, 3—William's Pierce

standing appears in tabulation on page 21 of this issue.

First honors in the Hower trophy contest were carried off by J. S. Williams, driving No. 108, 36-horsepower Pierce-Arrow roadster, which, like the Winchester Glidden car, finished with a double-header perfect-score mark, not having suffered a penalty of any nature in the road work and being passed clean by the technical committee. These were the only two cars of the thirty starters which had this double perfect-score record to their credit. Second honor in the Hower trophy went to J. A. Wicke, driving a 35-horsepower Moline model K four-cylinder 1910 roadster. Wicke piloted his car into Kansas City with a perfect road score, but lost 1.1 on the technical examination. Of the fourteen Hower trophy cars which checked out at Detroit but nine took the final examination, four having withdrawn during the contest and the fifth was disqualified on the last day's run for changing a wheel. Of the nine finishers, three, or 33 per cent, arrived here with perfect road scores, these being the Williams' Pierce-Arrow, Wicke's Moline and No. 109 Pierce-Arrow driven by C. Schofield. Third Hower honors went to No. 114 Lexington with a road penalty of 2 and a technical one of 1.8. This car had a perfect road score until within 20 miles of Kansas City, when a cotter pin spoiled its clean sheet.

The triangular fight among the Chalmers-Detroit, Premier and American Simplex toy tonneaux for the Detroit trophy, resulted in a victory for Jean Bemb driving No. 52 Chalmers-Detroit with 23.8 demerit marks. Second honors were carried off by C. Waltman driving No. 53 Premier with 34.3 points against him, and No. 51 American Simplex was third with 52.2. All three of these cars for the Detroit trophy ran with perfect scores for over half of the tour, but suffered more or less toward the end. The American Simplex had a perfect road score except for one penalty caused by damaging the radiator when a dried-up water trench was struck on the plains.

Although these are the standings of the different cars as announced here today, rumors are already afloat that two protests have been entered against the winning Pierce cars in the Glidden and Hower contests. The Premier company has protested Winchester's car, No. 9, on the ground that it made a part of the trip without its full lamp equipment as demanded by the rules, and it is understood that the Moline protest refers to a similar state of affairs with respect to the Williams winner, No. 108. No definite announcement has been made by the contest board as to these protests, but it is expected they will be acted upon in the near future.

Eight Perfect Scores Surprising

Had anybody stated when the contestants started out from Detroit that eight cars would reach Kansas City with perfect scores the statement would have been ridiculed, but, in spite of the mud and hills of the last day's run, in spite of the 4 days running over the sandy trails of the plains, in spite of the 2 days' sand from Detroit to Chicago, in spite of the unprecedented rough going on the disastrous Madison-to-LaCrosse stage, eight cars checked in last night with clean road records, a fact which reflects the highest credit on American motor car engineering and especially so on the four factories represented, namely, Pierce, Premier, Marmon and Moline. Four Pierce contesting cars started and four finished with perfect road scores; two of the three Premiers had perfect road marks; one of the two Marmons finished perfect, and one of the three Molines carried off a similar honor.

Although the highest honors of the tour are being showered on the eight cars which finished with perfect scores, as well as on the three which were the respective victors in the Glidden, Hower and Detroit ends of the contest, many of the other cars made most creditable records and had

luck not been against them would undoubtedly have shared in the perfect-score road work honors. One of these was the American Simplex, No. 51, which ran into a hidden creek bed on the plains and damaged its radiator; this was its only trouble on the tour and in the technical examination the committee could not find anything wrong with the car other than a dent in the base of the radiator caused by hitting the creek bed, and the breaking of one spring clip. Although the other cars received slight road penalties, only two of them had demerit marks of any magnitude. The road performances of the Hower cars did not average up so well as those of the Gliddenites, although it was expected that these machines with lighter bodies and carrying fewer passengers would have performed better than the Glidden cars.

Value of the Tour

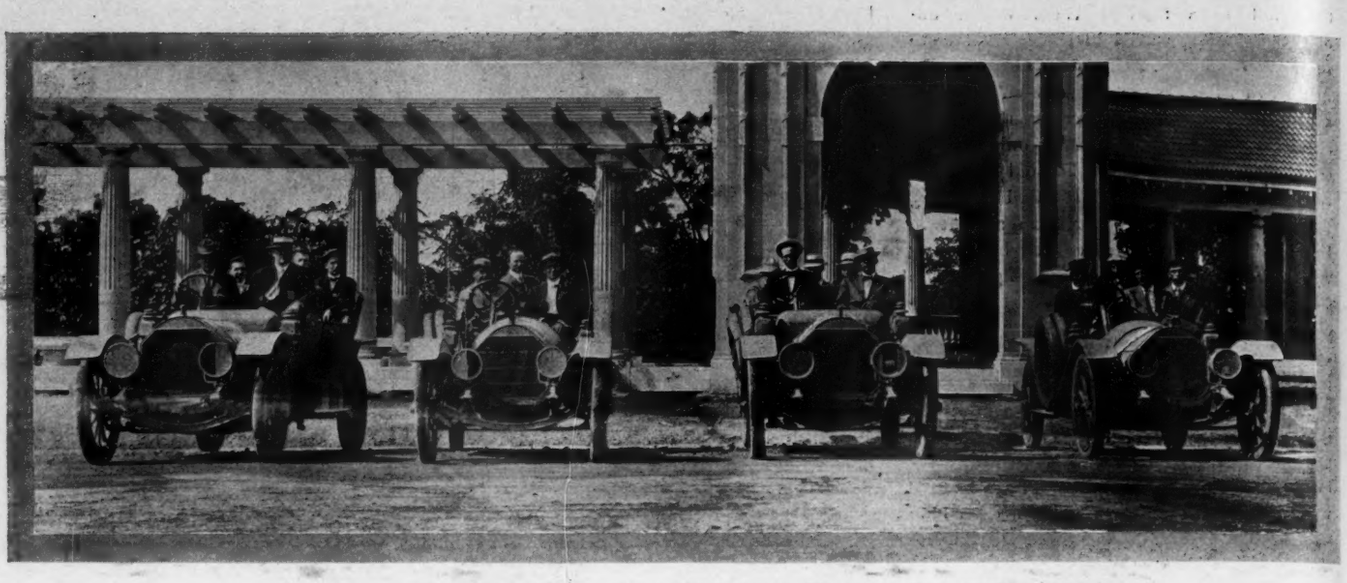
From a standpoint of touring the great value of this year's Glidden has been the missionary work which the forty-odd cars traveling through the country has done. This year's tour from Detroit to Kansas City has been a revelation compared with the funeral procession of a year ago. The west is this year at the climax of its prosperity; crops are better than they have been for a decade; prosperity is evidenced on every hand, and the entire population along the road was out to see the tourists pass, to lend them any assistance possible and to wish them the best of luck on the tour to Kansas City.

Previous to the start of the tour many makers anticipated that this year's Glidden would be through a poor selling territory, but the exact opposite has proven the rule, and, although the population of the towns and cities passed through cannot compare with that of New England, yet the wealth is greater and the spirit of investment is stronger, and the percentage of people owning cars in the territory passed through west of Chicago is in many cases more than four times as great as that in New England. The motor car has possessed the west, just as irrigation has taken control in many of the great sections of Nebraska and Colorado. A few years ago in many of the western towns and cities a car was unknown, but in the last few years it has entered by leaps and bounds until today, when cities of 8,000 and 10,000 population have from 170 to 200 cars within their limits, the majority of which have been sold within the last 1½ or 2 years at the most.

Motoring Fever Prevalent

Excepting when crossing the 80 miles of plains into Denver and when traveling over the plains for the first 2 days out of Denver through Colorado and western Kansas, the tourists were never out of touch of the motoring fever. On all of the other days motor cars were met by the tourists every mile or so along the road, every village passed through had its quota of two or three cars along the street, every town had its score or two lined up at the cross-streets, in the cities the numbers ran into the hundreds, and in the farming community cars were noted in the yards at the end of the houses and were a common sight in the harvest field where the grain was being garnered. From start to finish, with the exception named, this year's tour has been a par excellence demonstration of the oft-heard expression that the "sound of the motor is heard throughout the land." In brief there is not a section of Kansas, of Nebraska, of Iowa, or Minnesota but what the throbbing of the motor is a familiar sound; and no longer does the populace of these states look upon the car as a means of locomotion to be avoided, but one to be embraced. The real estate man of the west has found the car an indispensable adjunct of his selling lands; the large farmer uses the car as he used to his one-horse buggy; the traveling salesman employes it in those territories where distances are great; and the invasion of the car throughout the entire territory west of Minneapolis traversed by the tour is now on an irresistible march.

THE THREE TROPHIES CONTESTED FOR
1—Glidden trophy, 2—Detroit Trophy, 3—Hower trophy.



FOUR PERFECT ROAD SCORE PIERCE CARS—WINCHESTER, WILLIAMS, DEY AND SCHOFIELD

Of the 2,640 miles covered by the tourists, 3 days will always stand out as Waterloos in the trouble sense of the word, whereas the remaining 12 will be looked upon as more or less pleasure jaunts. The 3 strenuous days were Madison to La Crosse, Hugo to Oakley, and Salina to Kansas City. The trouble of the Madison-La Crosse stage was the mountain work over the three tunnel hills as well as the continual meeting of water breakers which made those of Pennsylvania look diminutive. The Hugo-Oakley stage, although a short one, was made a trying trip because of the rough trail on the plains, which was beset with dried up

PERFECT-SCORE DEY, PIERCE

PERFECT-SCORE HAMMOND, PREMIER

PERFECT-SCORE MARMON, MARMON

water trenches crossing the road every few feet, hazardous fords that had to be made, and dangerous dried up creek beds; at other places on this run there were not the two sandy furrows for the cars, but the track led across the grass of the plains wherever the confetti was strewn. The Salina-Kansas City stage would ordinarily have been an easy one had it not been for the heavy rains of the preceding night, which worked havoc with the Kansas gumbo. Added to this were the 80 miles of hills between Topeka and Kansas City with their rocky surfaces and gumbo roads below.

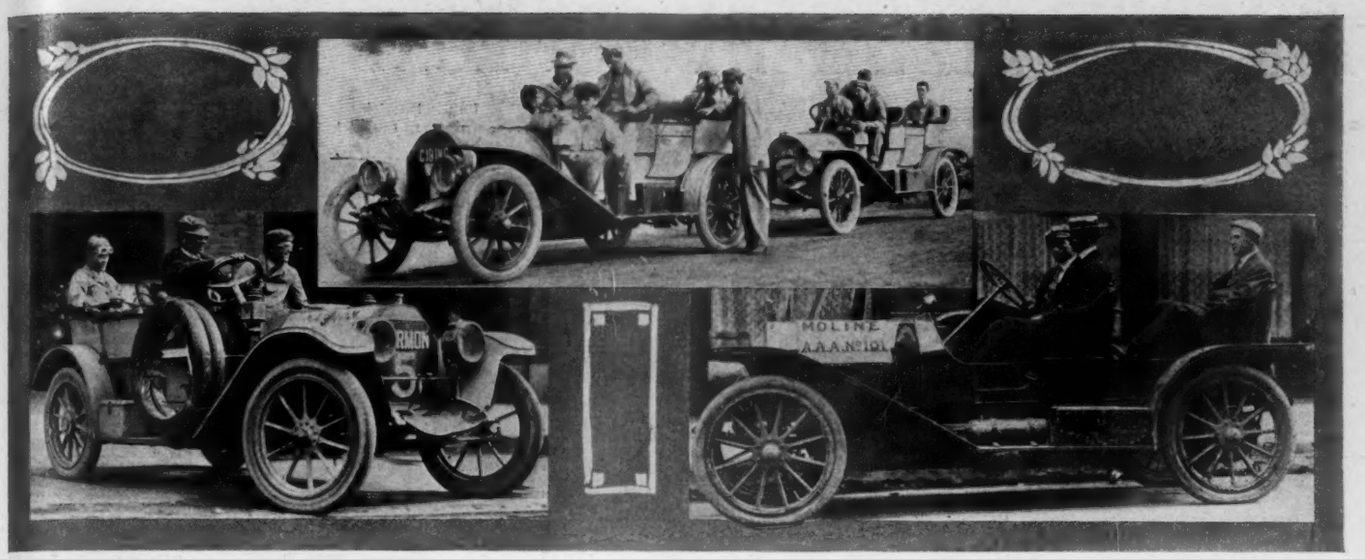
Rained Only Once

On but 1 of the 15 days was rain encountered; the standing weather order of all the other 14 being "hot weather with dusty roads." The sand roads between Detroit and Chicago carried off the dust honors, these 2 days proving the dirtiest ever experienced on a Glidden tour. On the gumbo districts of Iowa the cleanest touring was experienced, no more dust

PERFECT-SCORE WINCHESTER, PIERCE

rising from the gumbo roads than from an oiled street. This year's tour took premier honors over all preceding ones in the work of the cars, there being fewer to discontinue because of troubles than heretofore notwithstanding the fact that adjustments were not permitted on the cars. All of the cars acquitted themselves with greatest credit to the manufacturers; although they did not finish with perfect scores, many with slight penalties received, these not for parts that were broken but only for parts that had to be tightened in the final examination. This was the first time on a Glidden tour where drivers were penalized for work done on their car during the run, and where a close and critical examination was made of the cars at the finish and penalties imposed for derangements or defects. The tour has been a valuable one in that it has shown to the public the phenomenal reliability of the motor car; it has been valuable to the manufacturer in that it has shown him whatever little weakness his car may possess, and it has proven a marvelous stimulant to the motor industry in the great west.

Walter F. Winchester, winner of the



FOUR PERFECT, ROAD SCORE CARS, TWO PREMIERS, MARMON AND MOLINE

PERFECT-SCORE JAY, PREMIER

Glidden trophy, is a traveling trouble man for the Pierce factory, his duties being that of traveling over the country and correcting troubles that may arise with different cars and which the local men are not capable of handling properly. He is an offspring of the old bicycle industry and entered the motor car line with the Franklin company in 1901 as a member of the motor assembly force. From this department of the factory he went into the testing department, and in the spring of 1903 began his experience as a track driver with a Franklin car in California. For 3 years he followed this track work and in the fall of 1906 engaged as a road man for the Pierce company, with which he has been continuously associated ever since.

His experience as a contest driver dates back as far as 1903, the year of the St. Louis tour, at which time he drove the Franklin car from Poughkeepsie to Buffalo. In 1907 he drove the chairman's car in the Glidden trophy and in 1908 he performed a similar role. While this year is his first real big tour in which he has driven a contesting car, he has been in numerous endurance runs and hill-climbs within the last 2 years.

In speaking of the care bestowed on his Pierce car during the run Winchester said: "I drained all of the oil out of the motor every night on the run and put in 1 gallon of fresh oil. There was no occasion to add

PERFECT-SCORE WILLIAMS, PIERCE

a drop of grease to the transmission, rear axle or front wheels throughout the trip. The different grease cups on the car were filled every second night; no adjustment whatever of the carbureter was made in the mountain vicinity and the only time it was adjusted was when the water to the carbureter jacket was shut off at Minneapolis. I checked out first but one morning on the run, that being the Madison to La Crosse stage of the trip, and was first to check into La Crosse that night. On all of the other days I was generally third or fourth to check out and checked out thirteenth from La Crosse. We had but two punctures on the trip—one on the right rear entering Denver, and the other out of Hugo. When the puncture out of Hugo occurred a new casing was used for 50 miles, and at the night stop the old one was put on, so that the car has finished with the four original casings it set out from Detroit with, and there is Buffalo air in three of the tires. The highest speed made by us any time on the tour was 53 miles per hour going over that roller-coaster macadam stretch out of Omaha. The worst days of the tour were the Madison-aL Crosse, and the Salina-Kansas City trips, both of which called for continual work on the part of the driver. I made three adjustments of the foot brakes during the run—the first at La Crosse, the second at Kearney, and the third just entering Kansas City so as to have them in shape for the technical examination. I did not put a drop of water."

PERFECT-SCORE WICKE, MOLINE

PERFECT-SCORE SCHOFIELD, PIERCE

THE TABULATED REPORT OF ROAD PENALTIES

GLIDDEN ROAD PENALTIES

No.	Car	Day	Penalties		
1	Premier	..	0		
2	Premier	..	0		
3	Chalmers-Det.	1	1.0	.6	Material, wire and strap
				.4	Labor, loose fender
		2	.4		Labor, loose fender
		6	1.0		Labor, tightening fender iron
		7	204.0	17.0	Removing and replacing mud pan and crankcase and tightening connecting rod
				187.0	Time
		8	19.1	2.9	Labor examining two crankshaft bearings
				.6	Outside tool
				1.6	Material, connecting rod bearings
				14.0	Labor on connecting rod bearings
		9	1000.0		Withdrawn
	Total		1225.5		
4	Marmon	8	8.0	.2	Material, tape
				1.0	Use outside tool
				6.8	Labor, repair gasoline feed pipe
5	Marmon	..	0		
6	Maxwell	13	8.5	4.5	Material, new spring
				4.0	Labor on spring
7	Jewell	8	8.8	8.	Labor, repair hub flange bolts
				.8	Material, bolts
		10	.1		Labor on fender
		11	2.3	1.7	Labor on fan belt and cotter pin
				.1	Cotter pin
				.5	Fan belt
	Total		11.2		
8	Pierce-Arrow	..	0		
9	Pierce-Arrow	..	0		
10	Glide	8	2.6	1.6	Labor, repair steering arm
				1.0	Material, steering arm
		10	9.2	4.2	Material, front spring
				5.0	Labor on front spring
		11	119.3	113.0	Time, lateness
				6.3	Labor on fan bolt and front spring
		12	28.8	12.4	Material, new spring
				16.4	Labor on new spring
		13	447.0	215.0	Time, late
				6.3	Material, spring seats
				25.7	Labor on spring seats
		14	276.0		
	Total		682.9		
11	Thomas	11	1.0		Labor, repair gas feed pipe
		13	1000.0		Withdrawn
	Total		1001.0		
12	Midland	4	3.7	.6	Material, wire and strap
				1.6	Labor, left front fender
				1.5	Labor, bent mud pan
		7	.6		Tightening fender
	Total		4.3		
14	White	12	18.2	16.0	Lateness
				2.2	Labor, cleaning oiler tube
		13	.4	.1	Material, wire for fender
				.3	Labor on fender
		15	.7	.1	Material
				.6	Labor
	Total		19.3		

DETROIT TROPHY ROAD PENALTIES

51	Simplex	12	1.4	.4	Labor, radiator
				.8	Labor, steering gear
				.2	Outside material, grease
52	Chalmers-Det.	9	6.0	5.8	Labor, commutator shaft connections
				.2	Labor, tight motor bolts
53	Premier	8	.8		Labor, mending gas feed pipe, rubber hose; tightening lamp
		14	5.0	2.1	Material, rubber bumper and wire
				2.9	Labor on rubber bumper and wire
		15	20.3		Replacing spring, putting on fan belt, removing mud apron
	Total		26.1		

HOWER TROPHY ROAD PENALTIES

100	Moline	8	3.1		Labor, removing piece steel from crankcase
101	Moline		0		
102	Moline	8	16.1	.1	Labor, replacing cap screw, water flange inlet
				16.0	Labor, placing pin in camshaft gear hub.
		10	1.0	.2	Material, bolt for fender
				.8	Labor on fender
		15	29.5	.2	Material, taper pin
				13.3	Labor
				16.0	Time
	Total		46.6		
103	Brush	2	.4		Labor tightening connecting rod bearings
		4	3.0	.6	Material, new radius rod
				2.4	Labor on new radius rod
		5	2.2	.6	Material, new radius rod
				2.2	Labor on new radius rod
		6	1000.0		Withdrawn
	Total		1005.6		
104	Brush	1	40.8	34.0	Time, lateness
				.3	Set connecting rod bearings
				6.5	Labor, connecting rod bearings
		2	149.3	142.0	Time, lateness
				.3	Connecting rod bearings
				7.0	Labor on connecting rod bearings
		3	423.6	380.0	Time, lateness
				9.2	Connecting rod
				34.4	Labor, connecting rod
		4	343.9	335.0	Time, lateness
				8.9	Labor, 5 min. connecting rod bearings, 9 min. connecting rod bearings, 67 min. scraping bearing, 7 min. adjustments, 1 min. rear wheel cone
		5	294.0	285.0	Time, lateness
				.3	Connecting rod bearings
				.1	Extra nut
				1.1	Labor on bearing
				.5	Labor, repair gas feed pipe
				7.0	Labor, placing new bearing
		6	1000.0		Withdrawn
	Total		2251.6		
105	Chalmers-Det.	..			Disqualified
106	Hupmobile	4	358.0		Lateness
		5	1000.0		Withdrawn
	Total		1358.0		
107	Maxwell	4	2.6	.4	Material, spring clip
				2.2	Labor, replacing spring clip
		7	1.6		Tightening cylinder water gasket
		13	7.7	4.5	Material, new spring
				3.2	Labor on new spring
		15	23.5	.5	Material
				2.	Labor
				21.0	Late
	Total		35.4		
108	Pierce-Arrow	..	0		
109	Pierce-Arrow	..	0		
110	McIntyre	1	29.0	29.0	Minutes late
		2	423.7	405.0	Minutes late
				18.7	Labor, welding part on rear spring bar
		3	1000.0		Withdrawn
	Total		1452.7		
111	Jewell	4	9.0		Lateness
		5	6.0	3.8	Labor, outside retreading gas pump cock
				1.0	Labor, outside retreading gas pump cock
				.2	Material, hinges
				1.0	Labor on hinges
		6	5.8	5.6	Labor, tightening hub flange bolts
				.2	Material, washer
		8	8.4	.2	Material, spring clip
				.7	Tightening tire carriers
				.2	Material, wire, for tire holder
				1.0	Use outside tool
				4.4	Work on wheels and spring clip
		9	1.4	1.0	Material, spark plug
				.4	Labor, changing plug
		14	2.6		Labor on gasoline pipe
		15	5.0	4.6	Labor
				.4	Material
	Total		38.2		
112	Mason	4	4.3	.2	Material, wooden plug
				2.2	Labor changing petcocks
				1.9	Labor, making plug
		13	330.2	296.0	Time late
				33.0	Labor on piston pin bushing
				1.0	Outside tool
	Total		334.5		
114	Lexington	15	2.0		Labor on cotter pin

RESULTS OF THE TECHNICAL EXAMINATION

No. 1, Premier; Driver, Webb Jay

Tightening left rear wheel; time, 2 minutes	.2
Tightening front spring clip; time, 2 minutes	.2
Replacing broken spring clip; time, 7 minutes; material, 30 cents	1.0
Tightening left front and left rear engine bolts; time, 1½ minutes	.2
Fan belt replaced and tightened; time, 1 minute	.1
Tightening left front transmission foundation bolt; time, 4 minutes	.4
Vent pipe cover lost; time, 1 minute	.1
Material, 10 cents	.1
Rear spring upper quarter; material, $8.50	8.5
Time, 60 minutes	6
	16.8

No. 2, Premier; Driver, H. Hammond

One broken spring clip; time, 7 minutes	.7
Material, 30 cents	.3
Putting on fan belt; time, 2¼ minutes	.3
Putting on fan belt; time, ¾ minute	.1
One link for fan belt; material, 5 cents	.1
	1.5

No. 4, Marmon; Driver, F. E. Wing

Bottom leaf front spring broken; time, 10 minutes	1.0
Spring, 1 pound stock, 28 cents	6.
One step hanger broken; time, 5 minutes	.5
Material, 40 cents	.4
	2.5

No. 5, Marmon; Driver, Howard Marmon

Tightening cross steering rod, right hand end; time, 15 minutes	1.5
Material, new bolt, 10 cents	.2
Replacing a spring leaf, cost outside material, 30 cents	.6
Time, 30 minutes	3.0
Straightening left rear spring hanger; time, 20 minutes	2.0
	7.3

No. 6, Maxwell; Driver, E. J. Gager

Tightening steering column anchor bolts; time, 4 minutes	.4
Tightening right front wheel bearing; time, 4 minutes	.4
Truss rod loose; time, 10 minutes	1.0
Material, 20 cents	.2
Two bushings on rear propellor joint; time, 20 minutes	2.0
Material, 40 cents	.4
Tightening magneto advance rod; time, 2 minutes	.2
	4.6

No. 7, Jewell; Driver, O. P. Bernhart

Repairing spring clips on front axle; time, 26 minutes	2.6
Time, 20 minutes putting on clips	2.0
Material, 60 cents	.6
Left rear wheel; time, 5 minutes	.5
Material, $6	6.0
Tightening torsion rod; time, 5 minutes	.5
Tightening housing for differential pinion shaft; time, 3 minutes	.3
One rear spring clip tightened; time, 3 minutes	.3
New side frame member; time, 48 hours	288.0
Material, $60	60.0
Two radiator brackets; time, 5 hours	30.0
Material, $4	4.0
	394.8

No. 8, Pierce-Arrow; Driver, F. S. Dey

Repairing starting crank; time, 3 minutes	.3
Material, 60 cents	1.2
Repairing hinge on bonnet; time, 2 seconds	.1
	1.6

No. 9, Pierce-Arrow; Driver, W. F. Winchester

Perfect score

No. 10, Glide; Driver, A. Bartholomew

One bonnet catch; material, 20 cents	.2
Tightening set screw on radiator; time, 1 minute	.1
Tightening step bracket; time, 15 minutes	1.5
Material, 20 cents	.2
Spring clips; time, 15 minutes	1.5
Material, 70 cents	.7
Riveting spring clips in place; time, 15 minutes	1.5
Material, 40 cents	.8
	6.5

No. 12, Midland; Driver, E. O. Hayes

Replacing or repairing right rear wheel; time, 4½ minutes	.5
Material, $15	15.0
Replacing broken starting crank; time, 9 minutes	.9
Material, $1	2.0
Replacing both front fender irons; time, 1 hour, 30 minutes	9.0
Material, 70 cents	1.4
Tightening left rear spring clip; time, 5 seconds	.1
Tightening brake anchors; time, 20 minutes	2.0
Right front and left rear engine bolts tightened; time, 2 minutes	.2
Gasoline pipe bracket loose, one bolt replaced; time, 1 minute	.1
Material, 5 cents	.1
	31.3

No. 14, White; Driver, H. N. Searles.

Tightening steering gear; time, 13 minutes	1.3
Tightening tire iron brackets; time, 4 minutes	.4
Tightening left rear fender; time, 40 seconds	.1
Taking off drain pipe to heater and thread cut thereon; time, 7 minutes	.7
Labor, 5 cents	.2
Adjusting right front bearing of wheel; time, 7 minutes	.7
Left fender tightened; time, 1 minute	.1
Gear-shifting pin and cotter pin missing; time, 1 minute	.1
Material, 20 cents	.4
One screw and one screw loose over flow pipe; time, 1 minute	.1
Material, 20 cents	.2
Two mudguard screws missing; time, 1 minute	.1
Material, 20 cents	.2
Right fender bracket; time, 5 minutes	.5
Material, 20 cents	.2
Replacing right front spring; time, 45 minutes	4.5
Material, $10.80	10.8
Lamp bracket missing; time, 5 minutes	.5
Material, $4	4.0
Crankcase oiler tube; time, 5 minutes	.5
Material, 60 cents	.6
	26.2

DETROIT TROPHY

No. 51, American Simplex; Driver, W. A. Woods

Repairing radiator; time, 8 hours	48.0
Two broken spring clips; time, 20 minutes	2.0
Material, 80 cents	.8
	50.8

No. 52, Chalmers-Detroit; Driver, Jean Bemb

Tightening left rear fender iron; time, 1¼ minutes	.2
Tightening bevel gear pinion bearing; time, 3 minutes, 2½ minutes and 2½ minutes	.9
Tightening rear truss rod; time, 1 minute	.1
Screwing on bonnet ledge; time, 1 minute	.1
Material, 20 cents	.2
Tightening motor bolts; time, 4½ minutes and 2¼ minutes	.7
New balls in commutator; time, 45 minutes	4.5
Material, $4.30	8.6
Right hand steering arm, split washer; time, 5 minutes	.5
Material, 20 cents	.2
Tightening foot brake drum; time, 3 minutes and 14½ minutes	1.8
	17.8

No. 53, Premier; Driver, C. Waltman

One spring clip for front spring; time, 7 minutes	.7
Material, 30 cents	.3
Leak in radiator; time, 1 hour	6.0
Tightening engine foundation bolts; time, 1 minute and 30 seconds	.2
Water pump leak; time, 10 minutes	1.0
	8.2

HOWER TROPHY

No. 100, Moline; Driver, Van Dervoort

Oiler driver; time, 50 minutes	5.0
Material, 20 cents	.2
	5.2

No. 101, Moline; Driver, J. A. Wicke

One new bolt in step hanger; time, 1 minute	.1
Material, 20 cents	.2
Tightening three spring clips; time, 1¼ minutes	.2
Repairing cap screw on oiler base; time, 6 minutes	.6
	1.1

No. 102, Moline; Driver, W. S. Gregory

Two outside brake band guides replaced; time, 20 minutes	2.0
Material, 40 cents	.4
Tightening set screw on transmission bearing; time, 3 minutes	.3
Tightening lock nut on jackshaft bearing; time, 30 seconds	.1
	2.8

No. 107, Maxwell; Driver, C. E. Goldthwaite

Tightening right front wheel; time, 2 minutes	.2
Tightening right front dust cap; time, 1 minute	.1
Pinion housing loose; time, 2 minutes	.2
Collar bolt loose; time, 1 minute	.1
Material, 20 cents	.2
Right front spring saddle; time, 10 minutes	1.0
Material, $1.60	3.2
Gasket in top water pipe; time, 30 minutes	3.0
Material, 20 cents	.2
	8.2

No. 108, Pierce-Arrow; Driver, J. S. Williams

Perfect score

No. 109, Pierce-Arrow; Driver, C. Schofeld

Tightening steering drop arm; time, 7 minutes	.7
Tightening left front wheel bearing; time, 5 minutes	.5
One spring clip; time, 7 minutes	.7
Material, 30 cents	.3
One truss rod pin; time, 1 minute	.1
Material, 20 cents	.2
Tool box bracket and tail light; time, 30 minutes	3.0
Material, $1.20 for bracket and $3.50 for tail light	1.2
	3.5
	10.2

No. 111, Jewell; Driver, J. Shimp

Remaking two rear wheels; time, 10 minutes	1.0
Material, $12	12.0
One new cross spring; time, 1 hour	6.0
Material, $5.60	5.6
One new front spring; time, 1 hour	6.0
Material, $5.60	5.6
Right rear spring clip tightened; time, 4 minutes	.4
Left rear spring clips tightened; time, 4 minutes	.4
Adjusting main pinion in case bearing; time, 4 minutes	.4
Bolt out of brake race; time, 1 minute	.1
Material, 20 cents	.2
Rear transmission bearing tightened; time, 3 minutes	.3
Adjusting transmission bearings; time, 6 minutes	.6
Left radiator bracket cracked; time, 2 hours, 30 minutes	15.0
Material, $2	2.0
Leak in gasoline line; time, 1 hour	6.0
Straightening front horns; time, 1 hour	6.0
Material, $2	2.0
	69.6

No. 112, Mason; Driver, Roy Snyder

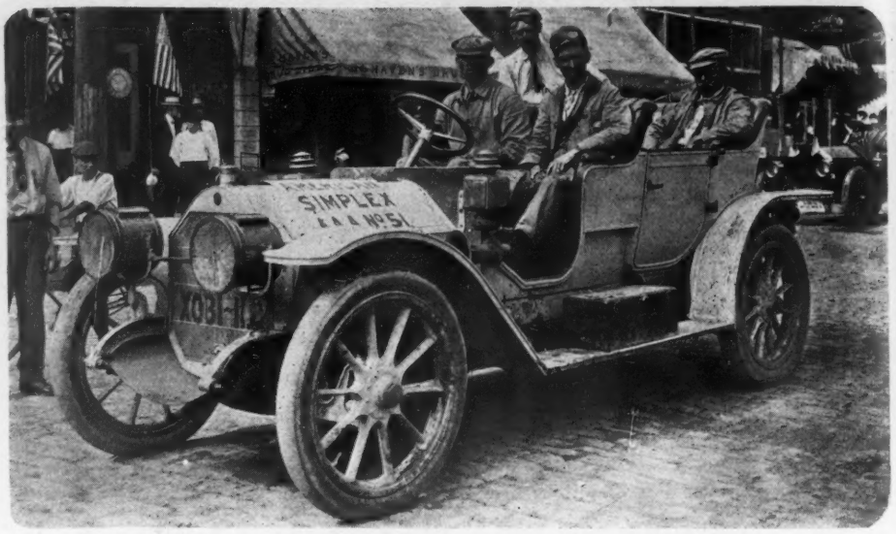
Replacing cotter pins in chain, fifty-nine missing; time, 21 minutes	2.1
Material, 20 cents	.2
Tightening two front spring clips; time, 1 minute	.1
Repairing leak in radiator; material, 10 cents	.1
Time, about 1 hour	6.0
Putting on one new lamp bracket; material, 80 cents	.8
Labor on same, 10 minutes	1.0
	10.3

No. 114, Lexington; Driver, J. C. Moore

Tightening distance rod; 2 minutes	.2
Tightening or repairing pinion shaft bearing, 7 minutes; no material	.7
Tightening right spring clip, 1 minute	.1
Tightening three rear spring clips; time, 6 minutes	.6
Tightening water connection on pipe to carbureter, 1 minute	.1
Repairing commutator rod connection, 1 minute	.1
	1.8

CONDITION OF CARS AT END OF THE TOUR

KANSAS CITY, Mo., Aug. 2—Greater credit cannot possibly be given to any other cars than those eight which reached here Friday evening at the end of the Glidden with perfect scores, after having covered 2,640 miles of varied road surfaces without an adjustment of any nature other than those permitted by the rules, namely, adjusting carbureters, cleaning the gasoline line should it become clogged, cleaning of spark plugs and adjusting of brakes. Eight cars making this run, 4 days of which were over plains and semi-plains on which the recognized idea of a road does not exist but consists of only a couple of sandy furrows, means 21,120 miles of perfect-score road work, which is a record not previously attained under such severe conditions in a long-distance tour of this nature before. All of these eight perfect score cars averaged practically 1 mile every 3 minutes from the time Detroit was left until Kansas City was reached, five of the daily runs being over the 200-mile mark.



AMERICAN SIMPLEX, WHICH PASSED GOOD TECHNICAL EXAMINATION

Remarkably Few Chassis Troubles Noted, Majority of of Troubles Being With Loose Running Gear Parts

Twenty-four Cars Running

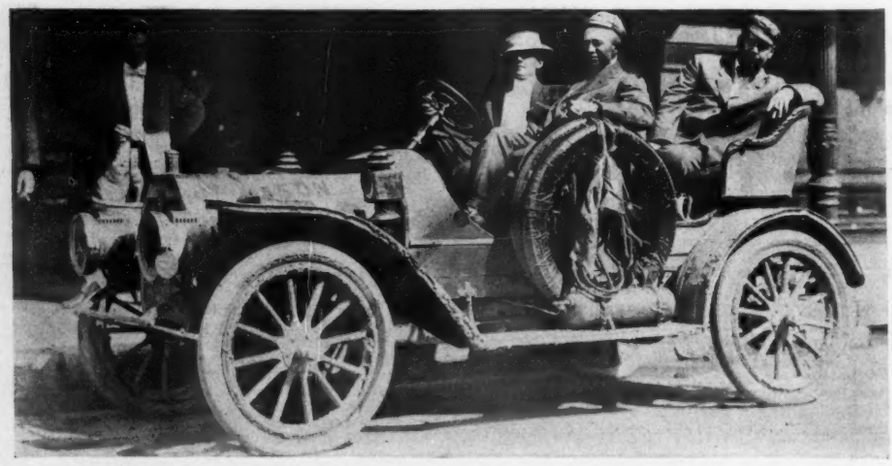
Although eight finished with perfect scores out of thirty, there were but twenty-four of the original thirty cars running at the finish of the tour, so that 33⅓ per cent, or one-third ended with clean road scores, which is a phenomenal record and a strong recommendation for American car construction. All honor must not go to the eight which finished with perfect scores, as some of the others did nobly. One in this class not to be overlooked was No. 114 Lexington, a car brought out in May of this year, but which throughout the tour ran with a perfect road score until within 20 miles of Kansas City, when a cotter pin working out necessitated a stop to replace it, not a bit of new material having to be used. This car passed a particularly enviable technical examination and all of the penalties were for tightening parts which undoubtedly had suffered somewhat from vibration during the long tour. For example: The distance rod had to be tightened, the pinion shaft bearing had to be tightened, one rear spring clip had to be tightened, three other spring clips had to be tightened, a water connection to the carbureter had to be tightened and a connection in the commutator control rod had to be tightened. This was the sum total of this car's troubles.

The story of the Lexington might be repeated with reference to all of the other cars, as a host of the troubles which entailed penalties at the final examination was for tightening of parts which had worked loose during the tremendous vibration strain of 2,640 miles over which the tour passed. This vibration would not have occurred with ordinary road conditions, but on the plains of Colorado and western Kansas the cars had to travel over water courses across the road which were anywhere from 6 inches to 3 feet deep, at times 18 inches of water were flowing through some of these. Besides these were a score or more of dried up sandy creek beds, into which the cars had to dip and which racked not a few of them severely.

A careful analysis of the road troubles and the final technical examination shows conclusively that continual vibration worked most of the troubles and that these troubles were not in actual breaking of parts but just in the loosening of them, and had the rules permitted of the tightening of nuts and adjusting of parts, but prohibiting the use of any new material, there would have been sixteen perfect scores at Kansas City instead of eight.

Work of Four Pierces

The work of the four Pierce cars was commendatory from start to finish. Winchester's No. 9 and Williams' No. 108 went through with perfect road scores and passed a technical examination. Williams was in the van of the tour every day catching the official car many times 50 or 60 miles before the night control was reached. Winchester, winner of the Glidden trophy, was always well up in front, so that neither of these cars was nursed any throughout the entire tour. Although the other two Pierces, namely No. 8, driven by Dey, and No. 109, driven by Schofield, had perfect road scores, they were penalized in the technical examination. Dey's troubles were slight, one being the starting crank, which was bent when dropping into a dried up creek bed across the road on the plains, and the other was a bonnet hinge. The No. 109 car suffered from vibration, its troubles being tightening a steering drop arm, tightening a left front wheel bearing, replacing a tool box which was torn off when dropping into a deep dried up creek bed, and requiring a new



TWO-CYLINDER MASON, WHICH DID COMMENDABLE WORK

THE LEXINGTON ROADSTER MADE A GOOD ROAD PERFORMANCE

Road Vibrations Responsible for Most of the Car Derangements—Western Highways Easy on Tires

spring clip. Winchester's car did not take on a drop of water between Detroit and Kansas City.

Of the three Premier cars entered officially in the run two came through with perfect road scores and the other, No. 53, had troubles consisting of a leaky gasoline line, where it rubbed against the mud apron, a broken spring, and putting on a fan belt. Both of the perfect score cars, Nos. 1 and 2, driven by Webb Jay and Harry Hammond, respectively, made over half of the run without fan belts and did not experience any trouble with heating, having to take on not more than a quart of water on any day's run. On the second last day of the run Webb Jay, No. 1, broke a rear spring and was compelled to make the whole of the last day's run with the car resting on the bumper. Considering the rough nature of the roads this was a particularly gruelling test for the car and undoubtedly resulted in the technical penalization that this car received. All of the parts penalized in the technical examination originated from vibration. These penalties were: Tightening a front spring clip, tightening a couple of engine arm bolts, tightening a left rear wheel, tightening a foundation bolt on the transmission and replacing a broken spring. No. 2 Premier had nothing wrong in the technical examination but to replace a broken spring clip and put on a fan belt; this was a most creditable performance. No. 53 Premier's troubles were entirely due to vibration and called for a new spring clip, tightening engine supporting bolt, tightening of pump packing, and a radiator repair. During the run these cars maintained a conservative pace, starting out midway of the tour and finishing anywhere from ½ to 1 hour ahead of schedule. The spring trouble which developed in two cars was unexpected as the springs used were not those that have been used during the present season but a kind that were being tested out.

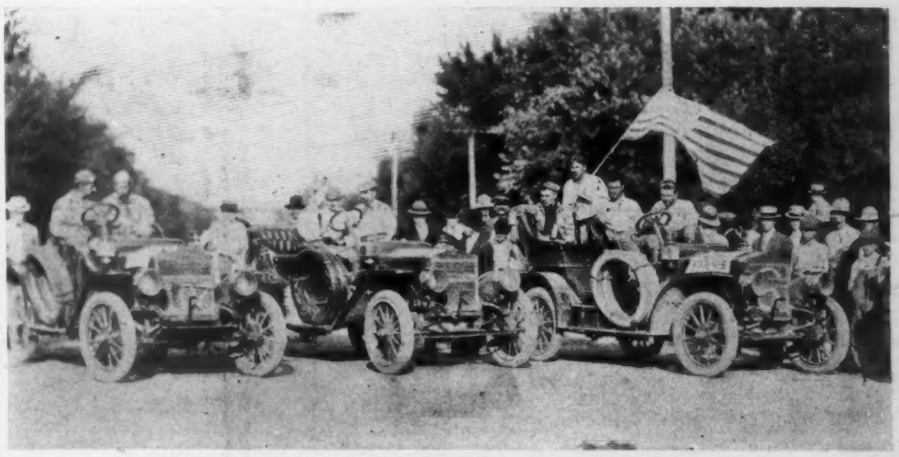
Marmons Behave Well

Both of the Marmon cars entered behaved with special credit from start to finish and took a particularly clean technical examination. No. 5, driven by H. C. Marmon, had a perfect road score, and No. 4, driven by Frank Wing, experienced but one road trouble, namely, the loosening of a flange on the gasoline feed pipe. This was the sole trouble for the two cars on the entire trip. In the final examination the only point found on Wing's car was a piece about 3 inches long broken off the end of the bottom leaf of a spring. On No. 5 Marmon the same spring leaf had a portion broken off, and in addition was a slight penalty for straightening a spring hanger and tightening one end of the tie rod between the steering knuckles. Both of these cars carried tops during the early part of the run but discarded them after leaving Minneapolis. Frank Wing was first to check in on several days during the tour and was always among the three or four leaders in the front of the tour. The other Marmon was generally five or six cars back from the pacemaker.

A performance that created considerable attention throughout the west, in that it is a western product, was the triple Moline entry in the Hower, bearing the numbers 100, 101, and 102. No. 101 made a perfect road score; No. 100 had a sole road trouble, a piece of metal getting between the timing gears, which metal had to be removed, but which had not damaged the gears so that they were not changed or even repaired. No. 102 had an equally slight trouble which occurred twice and consisted in a taper pin holding one of the timing gears in place dropping out. To reinsert it called for considerable work but the timing gears were not injured and no new parts other than a pin needed. In the technical examination the troubles, as discovered, were slight, requiring but a new bolt in a step hanger, tightening some spring clips, tightening a lock nut, tightening a set screw, and repairing the oiler driver. A noteworthy feature about these cars is that they made the entire run without carrying spare parts of any nature, not even an extra spark plug, an extra cotter pin, an extra bolt, or piece of wire being taken along.

Road Work of Chalmers

The road work of the three Chalmers-Detroit cars, one entered in the Glidden, one in the Hower, and one in the Detroit trophy, was particularly favorable excepting No. 3, the Glidden entry, which burned out a connecting rod bushing and which had trouble thereafter until the car was withdrawn on the ninth day. No. 52, which won the Detroit trophy, had only one road trouble, and that when the locking ring holding the bearing race on the commutator released, so that the balls on the commutator were lost, and thereafter the car made the complete trip on the magneto. In the final examination this car showed no troubles other than some loosened parts due to vibration. Among these parts to be tightened were the left front fender, a bonnet screw, a rear axle truss rod, a motor bolt, a brake drum, and



TWO MAXWELL CONTESTING CARS AND ONE PRESS CAR

a bevel gear bearing. No. 105 in the Hower ran with a perfect road score until the last day, when tire trouble ditched it, a wheel was bowed out at the hub, a new one borrowed and the car disqualified for using a borrowed wheel. This borrowed wheel was taken from the Chalmers press car, which had the damaged wheel repaired in a blacksmith shop and completed the tour to Kansas City. This car did not take the technical examination because of its disqualification.

The work of the two Maxwell cars, No. 6 in the Glidden and No. 107 in the Hower, was noted daily. No. 6 had but one trouble which robbed it of a perfect road score, and that was the breaking of a spring. Shock absorbers were not used on these cars. The only trouble with No. 107 on the road was a spring clip, a broken spring, and tightening a water gasket. In the technical examination the troubles of these cars appeared to be solely due to vibration and the correction of them consisted in tightening of different parts. In one the parts to be tightened were a steering bolt, a wheel bearing, an axle truss rod, and a magneto advance; in the other a wheel bearing, a dust cap, a pinion housing, a collar bolt, and a spring saddle. Both of these cars maintained a conservative pace throughout the run and were generally well ahead of their running schedule.

White Uses Kerosene Only.

The No. 14 White had as its chief mission in the tour the demonstration of kerosene as a feasible fuel, which fuel was used from start to finish and which the driver was able to obtain at every cross-road store at a price ranging from 6 to 8 cents less than the figure asked for gasoline. The car had but two road troubles, one on the run out of Denver when the oiler tube had to be cleaned, and another on the last day when a fender had to be wired up. In the technical examination the car had to have several parts tightened, such as steering gear, tire arm brackets, fenders, wheel bearing, fender bracket, and a few mud guard screws were missing.

The only two-cycle in the run and one which made a particularly creditable road performance was No. 51 American Simplex, contending for the Detroit trophy. This car would have had a perfect road score had it not been for its dropping into a deep water trench across the road on the day's trip out of Denver. This seriously damaged the base of the radiator and loosened the steering gear, but outside of this the car had not a single instance of road trouble. In the technical examination the car received a heavy penalty for the radiator repair, and the only other penalty imposed was for a couple of broken spring leaf clips.

No. 12 Midland, in the Glidden end of the contest, had a perfect score on 13 of the 15 days of the tour and the only trouble was due to a broken fender iron and a dent in the mud apron which occurred on the Madison-La Crosse run. This car was one of the leaders into the night control on many days of the tour and undoubtedly would have been the first car into Kansas City had it not been for striking a stone out of Lawrence, which destroyed a tire and badly damaged a rear wheel, notwithstanding which the car was third into Kansas City and completed the day with a perfect score. In the technical examination this car was penalized for tightening several running gear parts, including a spring clip, brake anchors, engine bolts, gasoline bracket, and had to replace two fender irons, a rear wheel, and the starting crank.

No. 12 Midland was Always Up in Front

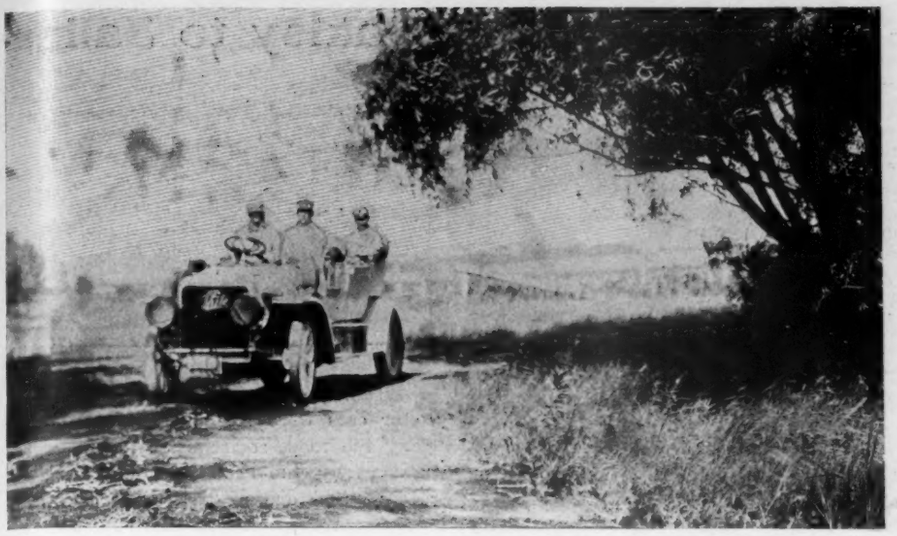
A car which suffered road penalties but which completed the tour and had no troubles whatever with the motor, transmission or power plants, was the No. 10 Glide. Its troubles were all with the front springs and the spring seatings on the axle which caused penalties from Denver on. In spite of having made several days' runs with broken springs the final examination brought out very few defects in this car, consisting of but a bonnet catch, tightening a set screw, tightening a step bracket, a new front spring clip and riveting a spring clip in place. It was particularly creditable that a car with front spring trouble should have shown so few troubles due to vibration at the completion of the run, the motor not suffering a penalty.

Mason Only Two-Cylinder

The only two-cylinder car to officially complete the tour as a contestant was No. 112 Mason, which made 13 perfect score runs out of fifteen and had but two road troubles. One road trouble was a minor affair consisting of but the breaking of a petcock; the other on the thirteenth day was the burning out of a bushing on a connecting rod. In other respects this car made a creditable road showing and invariably ran away ahead of its schedule, the car never being nursed along the road. In the final examination the penalties were meager, requiring a new lamp bracket, tightening two front spring clips, replacing some cotter pins in the driving chain and repairing a leak in the radiator.

The two Jewell entries, Nos. 7 and 111,

Studebaker Press Car in Plain Regalia



THE KEROSENE WHITE ON KANSAS ROADS.

had 13 and 8 perfect score running days respectively. No. 7's road troubles were minor, consisting of work on a fender, and a couple of flange bolts on a wheel. No. 111 had trouble with its tire carriers, changed a spark plug and tightening some hub flange bolts.

LIST OF EXTRA PARTS CARRIED

No. 1, Premier; Driver, Webb Jay

Two low tension igniter plugs, two jump spark plugs, one valve cap yoke, one valve spring, one valve.

No. 2, Premier; Driver, H. Hammond

Two low tension igniter plugs, two jump spark plugs, one valve cap yoke, one valve.

No. 3, Chalmers-Detroit; Driver, W. Bolger

Two rolls of copper wire, one box of cotter pins, roll tire tape, one coil solder wire.

No. 4, Marmon; Driver, F. E. Wing

One carbureter air valve, one air valve spring, one carbureter guide, one carbureter nut, one valve, one valve spring, one valve washer, two split valve washers, one fan belt, two spark plugs, one ball bearing, one piece water pump packing, four spark plug gaskets, two valve cover gaskets, two shoulder pins, thirteen nuts, five cap screws, nine taper pins, ten washers, twelve cotter pins, four pieces rubber hose, three hose couplings, one piece annealed wire, one can Smooth-on.

No. 5, Marmon; Driver, H. C. Marmon

Same as car No. 4.

No. 6, Maxwell; Driver, E. P. Gager

Right and left steering knuckles, right and left steering knuckle steering arms, two large and two small steering knuckle cones, one drive shaft yoke, one pinion shaft yoke, two sets universal yoke pins, pin locks, pin lock screws, one driving pinion support complete, one inside and one outside ball races complete, Splitdorf carbon brushes and copper brushes, one front and one rear spring, one universal cross, two steering knuckle cone lock nuts, four spark plugs, two spring straps, ninety-seven cotter pins, one magneto-breaker arm and screws, one roll tape.

No. 7, Jewell; Driver, O. P. Bernhardt

One D. W. F. bearing, one valve, one valve spring, fan belt, coil copper wire, box cotter pins, roll tape.

No. 8, Pierce-Arrow; Driver, F. S. Dey

Six spark plugs, one inlet valve complete with spring, spool and cotter, one exhaust valve complete with spring, spool and cotter, one fan belt, one package cotter and taper pins, one master vibrator spring.

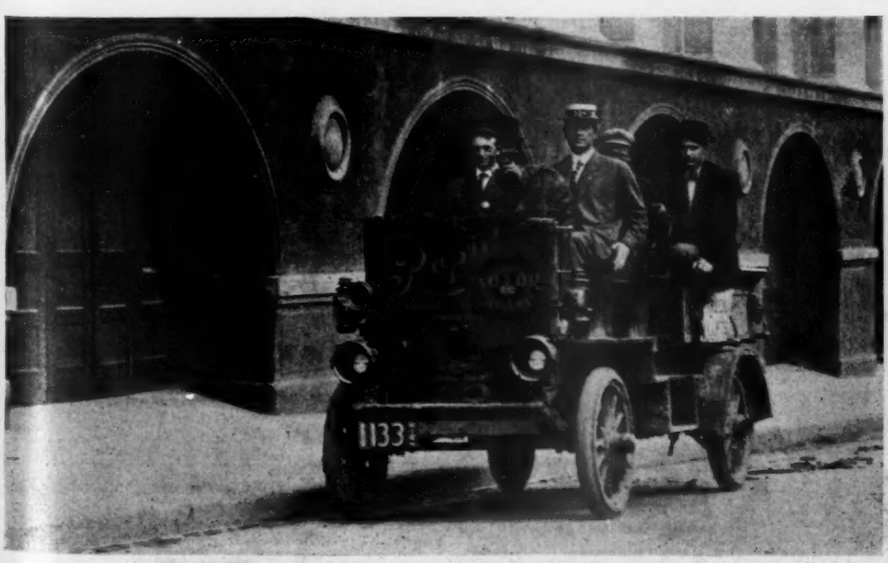
No. 9, Pierce-Arrow; Driver, W. Winchester. Same as No. 8.

No. 10, Glide; Driver, A. Bartholomew

One double steering arm, one single steering arm, four roller bearing cones, three valves, one package emery, three fan belts, package assorted washers and screws, one front spring, three front spring clips, nine spark plugs, box assorted washers and cotters, one package soft wire, five feet rubber hose, one roll wire tape.

No. 11, Thomas; Driver, G. Buse

Four spark plugs with gaskets, four countershaft keys, one chain, two F. S. ball bearings, water pump connection, six hose clips, 18 inches rubber hose, 1 foot copper wire, three pieces rubber hose, six sheets emery cloth, one bag assorted nuts, bolts and pins.



RAPID TRUCK IN KANSAS CITY AT END OF TOUR

No. 12, Midland; Driver, E. O. Hayes

Two upper and two lower spring clips and nuts, two front spring clips, two front spring shackles, two front spring bolts and nuts, one right and one left steering spindles, ten spark plugs, one set magneto parts, one box cotter pins, nuts and washers, soldering outfit.

No. 14, White; Driver, H. N. Searles

One vaporizer, two pilot lights, one small spring, one box packing, one coil wire.

No. 51, American Simplex; W. Woods

Twenty-six nuts and pins, magneto carbon and holder, one spool copper wire, three adapters, six spark plugs, twelve spark plug gaskets, one piece ¼-inch brass pipe, assorted cotter pins, one muffler cut-out spring.

No. 52, Chalmers-Detroit; Driver, J. Bemp

Four spark plugs, roll tape, box cotter pins, roll copper wire.

No. 53, Premier; Driver, C. Waltman

Two low-tension plugs, two jump spark plugs, one valve cap yoke, one valve spring, one valve.

Nos. 100, 101, 102, Moline

One bundle copper wire each.

Nos. 103, 104, Brush

One cam gear and shaft complete, one transmission coupling, one spring post, one chain, two pair connecting rod bushings, five Winkley oilers, two large and two small bearing cones, four master links, four set screws, one spring and bracket, five valve springs, one right front spindle, one grease cup, one starting rachet, eight stop bolts, eleven carriage bolts, two commutator springs, two starting crank pins, five check nuts, fifteen lock washers, eighty-eight steel balls, two spindle adjusting nuts complete and two screws, one roll tape, one box assorted keys, one carbureter complete, three spark plugs, 20 feet copper wire, one valve.

No. 105, Chalmers-Detroit; J. Machesky

Eight spark plugs, one roll tape.

No. 106, Hupmobile; Driver, F. Steinman

One carbureter, one magneto, two shackle bolts, nuts and washers, four spark plugs, roll wire tape, roll copper wire, one piece emery cloth, two complete sets front roller bearings, one complete rear set roller bearings, one front spring clip complete, one radius rod complete, one transmission sliding member, one cross steering connection complete, four hand brake to shaft pins, one rear wheel axle pin, one clevis pin, two right and two left adjusting cones with one nut each, one stationary cone and washer.

No. 107, Maxwell; Driver, C. E. Goldthwaite. Same as No. 6.

Nos. 108, 109, Pierce-Arrow

Same as cars Nos. 8 and 9.

No. 110, McIntyre; Driver, F. Goodwin

Ten axle clips and bolts, one set transmission fibers, four rocker arms complete, four crank base bearings, four valves and cotters, two piston pins and bushings, four valve springs, two connecting rods with bushings, six piston rings, four cylinder head gaskets, one transmission gear complete, one high speed clutch, four roller bearings, two gasoline pipes, one grease cup, four differential bushings, two radius rods, 10 feet ignition wire, four grease cups, one push rod with rollers, two valve spring discs, one steering rod belt, one knuckle bolt, twelve cap screws, four check valves for oiler, four taper pins, 15 feet driving chain, twenty-four chain repair links, one carbureter, two wire bolts, two spark plugs.

No. 111, Jewell; Driver, J. Shimp

Eight spark plugs, one fan belt, two rolls tire tape, one box cotterpins.

No. 112, Mason; Driver, R. Snyder

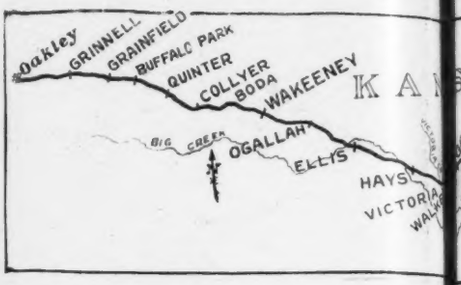
One pair rear axle bearings, six valve springs, two valves, one set valve parts, four spark plugs, fifteen chain links, 5 feet magneto cable, sixteen bolts and nuts, box cotter pins, one connecting rod and main bearing bushings, one valve lifter roller and push rod complete, one front and one rear spring clip, one pet cock, one roll tire tape, one piece solder, one coil wire, one magneto tinner, two battery connectors, one roll tire tape, two brake pins, one valve pin, one sheet emery cloth.

No. 114, Lexington; Driver, J. Moore

One fan belt, two rawhide strings, ten spark plugs, four sheets emery cloth, one box valve grinding composition, one roll tape, ten spring bolts with nuts, two spring shackles, four yoke ends, one turnbuckle, four valve springs, washers and keys, two gasoline shut-off cocks, four gasoline connections, seventy-two belts, nuts and screws, eleven rivets, 132 cotter pins, 41 lock washers, three carbureter throttle screws, four carbureter needle valves, three air valve springs, one air valve adjusting screw and nut, one Woodruff key, one tubing connector.

Hot Run From Oakley to Salina

DEY'S PIERCE AND AMERICAN SIMPLEX ON KANSAS PLAINS



FOURTEENTH DAY
OAKLEY TO SALINA, 199.7 MILES
Weather Intensely Hot, Roads Dusty

Class A schedule.....	10 h. 00 min.
Class B schedule.....	10 h. 20 min.
Class C schedule.....	10 h. 40 min.
Class D schedule.....	11 h. 00 min.
Class E schedule.....	11 h. 20 min.

SALINA, Kan., July 29—Today's run has been a welcome one because the plains have been left behind, and the two sandy furrows along which the cars have traveled the majority of the time since leaving North Platte are no more. Yesterday step by step they disappeared and the broad dirt road without a semblance of grass in the center took their place. Leaving Oakley the roads are straight for miles with wire fences on each side; in fact, all day today has been over straight roads, the survey of this part of the state being apparently on the right-angle principle. Today has brought the tourists to the prosperous central part of Kansas and from now until Kansas City is reached it will be a continual procession through the best agricultural lands of the west. The prosperity of the country has been gradually increasing throughout the day's run. Oakley may best be described as on the transition line, with the vast wilderness of semi-cultivated plains to the west and the cultivated lands to the east. The physical conditions of the country today have varied in many respects from those of yesterday; the land has not that irresponsible rolling surface of the plains, but a more organized appearance.

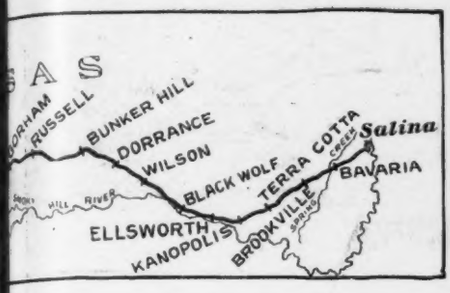
Evidences of Prosperity

No sooner had Oakley been left behind this morning than evidences of prosperity appeared on every hand. At every railroad station is the elevator for storing the grain; fields are dotted with stacks of hay and grain; comfortable homes deck the country everywhere; and around each are vast clusters of trees which offer desired shade in summer time and protect the home and orchard from the winter blasts. On either side of the road are continuous miles of wire fencing with white stone posts obtained from nearby quarries; in the fields were scores of reaping machines or binders harvesting the ripened grain; motor cars were met every few minutes along the road, sometimes two and three in a party; the smallest villages passed through had one or two cars that were out to see the motorcade go by; and in the towns of 4,000 or 5,000 population motor cars lined both sides of the street and the entire population was out. In fact today has been as it was in Minnesota and in the most fertile belt of Iowa and Nebraska, and agricultural Kansas was welcomed by all in the party.

Not alone were these the only evidences of the return to civilization after the experiences of the plain. When looking ahead to the right and to the left all day today the eye found a continuous circle of forests meeting the sky line instead of the treeless plains; like in Nebraska the majority of these trees have been planted, but their presence adds as much to the general beauty of the country and their shade is just as welcome as if they were nature planted. One of the welcome sights of today was crossing streams that had water in them, instead of the dried up river beds to which everybody has become so accustomed during the last 4 or 5 days. The presence of rocky hillsides throughout the country, running over stretches of stone roads, seeing a manufacturing plant, again, passing through towns and villages with shade trees on either side, and a score of other indications of long-settled land were welcomed

MOLINE, MARMON AND OTHER CARS TRAVELING ON THE TRACKLESS COLORADO PLAINS

Through Rich Kansas Grain Lands



WING'S MARMON ON A STONE ROAD IN KANSAS

every half hour by the party as they passed along the road. In spite of all these welcome sights, today has been the hottest day of the tour, the mercury standing at 100 in the shade at Ellsworth, 30 miles out of Salina. At numerous places along the road the hot blasts, coming as from an oven, swept in the faces of the passengers and the necessity of thermos bottles and straw hats was recognized for the first time.

Flourishing Towns Seen.

There have been three leading centers passed through on today's run, these being Ellis, Russell, and Ellsworth, all flourishing towns hedged in with boundless corn and wheat fields but with streets well shaded and numerous garages in each place. Today's route led through a vast number of small places, such as Grinnell, Buffalo Park, where the fame of Buffalo Bill originated, Quinter, Gorham, Wilson, Brookville, all of 1,000 or less population, but prosperous railroad centers. In the majority of them two or three cars were noted.

Although today's run has been over the best stretch of road since leaving Kearney, the penalty list is greater than was generally expected, which is doubtless due to the rough treatment the cars received on the four days crossing the plains. Four cars were penalized. The first Glidden contestant to suffer was No. 14 White, which received .4 points caused by having to get some wire to repair a fender. The penalty was divided up with .1 for material, being 10 cents for the wire, and .3 for the 3 minutes labor on the job. No. 111 Jewell added 2.6 points to its penalty score because of trouble with the gasoline feed pipe. The only car in the Detroit trophy class to be penalized was Premier No. 53, which received 5 points for work on a rubber bumper after a spring had broken; the penalty consisted of 2.1 for material, which was a rubber bumper and some wire, the bumper being used under the spring and the wire for fastening the mud apron, which had been damaged. The Glide touring car No. 10 received 276 points because of trouble to the seating on the front spring. The difficulties happened some distance out and made the car's arrival late, the penalty showing 215 minutes lateness, 25.7 for work, giving a total for the day of 276.

The Mason car received for yesterday's run a penalty of 296 points for lateness, .2 for material, 1 for outside labor, and 56 for labor. This car's troubles consisted in burning out a connecting rod bushing when 30 miles out of Oakley. The driver and mechanic did the work of rebushing and made the run into Oakley, although arriving particularly late.

Salina, with its population of 13,000, is among the best of the small cities in Kansas, and has four motor car salesrooms which handle such makes as Maxwell, White, Brush, Overland, Franklin, Oldsmobile, Regal, Ford, Great Smith, Buick, and other makes of cars. The city has a motor car club of 150 members, with W. W. Watson as president, and George D. Adams secretary. In all 120 cars are owned in the city, and within a radius of 2 miles of the center of the city 160 are owned, the other forty being in the outlying suburban districts.

Entertainment of Tourists

On the arrival of the tourists here this afternoon refreshments were served by the club and dealers, and tickets of admission given to the natatorium across the street from the hotel. This proved the greatest entertainment that could have been offered after the 2 days of dusty traveling out of Denver.

NO. 107, MAXWELL RUNABOUT CROSSING A FORD ON THE COLORADO PLAINS

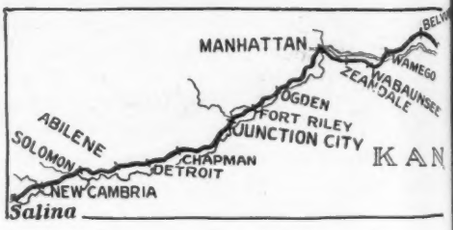
AMERICAN SIMPLEX CAR NEAR HUGO, WHERE IT RAN INTO DEEP HOLE ON PLAINS

Tour From Salina to Kansas City

FIFTEENTH DAY
SALINA TO KANSAS CITY, 212.8 MILES

Wet Weather, Roads Muddy	
Class A	schedule.....10 h 39 min
Class B	schedule.....10 h 59 min
Class C	schedule.....11 h 19 min
Class D	schedule.....11 h 39 min
Class E	schedule.....11 h 59 min

KANSAS CITY, MO., July 30—The fifth annual Glidden tour is ended as far as the road work of the cars is concerned and nothing now remains but to await the result of the technical examination which starts tomorrow morning on the floor of Convention hall, where the twenty-four contesting cars which finished the fifteenth day of the tour are parked under official observation tonight. In past Glidden tours the last day has generally been a parade from start to finish, but today has been a Waterloo, for it has been the first day that the cars have had to contend with mud and rains, every one of the previous 14 running days of the tour being fine weather with dry and dusty roads. Last night at Salina the first signs of the final day's baptism were everywhere apparent. From early evening the sky was ribbed with flashes of lightning, the 100-in-the-shade temperature continued into the night and toward early morning the first heavy downpour began. But Salina was but on the edge of the storm and it was not until the first town, Detroit, 30 miles out, was reached that the real zone of Neptune's hostilities was reached. Here all of a sudden and without



any apparent cause the stretches of well-sprinkled roads over which the cars had scampered from Salina at much above a legal speed limit ended and nothing was ahead but a long, jet-black ribbon winding between the long grass at either side through a flat country as far as the eye could see. As soon as the cars struck it the rear wheels wanted to take the place of the front ones, the front ones headed for everywhere but the road and the real experiences with Kansas mud began. It was not a gumbo, but a grade of mud of very close relationship. From Detroit to Kansas City, 180 miles, was practically a continual fight with such roads except for occasional stretches of 9 or 10 miles where the roads were quite dry and in one or two cases dusty. The early cars passed through a heavy rain storm between Chapman and Junction City, but this was over before the main guard of the party reached that district.

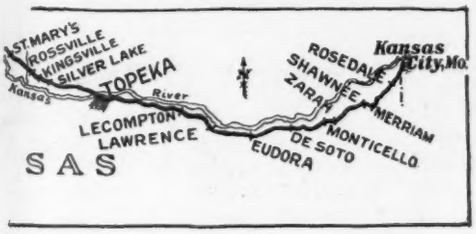
Hardest Day of Tour

It has been rumored on every hand that the last day's run would be the hardest of the whole tour, not because it was the longest but because of the continuous hills which lie between Topeka and here, the last 80 miles of the trip. These rumors proved true and tonight everybody is talk-

THE GLIDE IN LUXURIANT KANSAS TERRITORY

CREW OF THOMAS INVESTIGATING FORD OUT OF HUGO BEFOR E CROSSING

Final Day of 1909 Glidden Tour



ing of the strenuous nature of the run, particularly the stony hills between here and Topeko and the miles of sticky clay that made it necessary to travel almost half of the distance on intermediate speed, with occasional dropping into low on the hills.

With road conditions of this nature it is not surprising to know that seven cars were penalized and that when almost within the shadows of Kansas City two perfect-score contestants had to surrender to the inevitable and accept penalties. The first perfect score to go was Lexington runabout No. 114 in the Hower, which car has attracted attention ever since leaving Detroit, being a practically unheard-of machine until it made its debut at the starting point in Detroit. Its trouble today was simply that of a cotter pin dropping out of place in the rear axle. This pin held the nut in place for securing the driving clutch for the wheel on the floating axle, and caused a 20-minute stop while the road wheel was taken off and the pin put back in place, the total penalty being 2 points for time but nothing for material.

The second perfect-score car to go was No. 105 Chalmers-Detroit in the Hower, which when 40 miles out burst a tire and the quick-detachable ring giving way the car ran into a ditch, bowing out the front wheel. The Chalmers-Detroit press car was close at hand and a wheel was borrowed from it and the No. 105 made the run into Kansas City with this wheel while the press car had the damaged wheel repaired in a blacksmith shop. Borrowing a wheel conflicted with the rules and the car was disqualified at the daily meeting tonight. With the Chalmers and the Lexington went two of the remaining five perfect-score Hower cars, leaving but three with perfect-score rank to enter this city, these being No. 101 Moline, driven by J. A. Wicke; No. 108 Pierce, by J. A. Williams, and No. 109 Pierce, with S. Schofield as driver.

But this did not end the penalization story of the Howerites. No. 102 Moline was debited 29.5 points for a trouble which gave it its first penalty on the day of the tour. The trouble was a taper pin holding a timing gear on the front end of the engine which dropped out. The gear is held in place by key and taper pin. The key worked out on one other occasion and when it repeated the performance today nothing remained but to take off the radiator, remove the gear cover and get at the root of the difficulty. The car was penalized 13.3 points for labor, being a little over 2 hours' work, there were 2 points for material, being the cost of a new taper pin which was not carried in stock as not one of the Moline cars carried a spare part with them, and added to this were 16 points for lateness checking in today.

JEWELL RUNABOUT IN THE HEART OF THE KANSAS CORN BELT

MOLINE OFFICIALS AND CREWS AT CONVENTION HALL

No. 53 Premier toy tonneau in the Detroit trophy class suffered an additional penalty today of 20.3 points, the majority of which was due to breaking a spring on yesterday's run and which was replaced before the start of today's.

The spring was a rear three-quarter elliptic, and was not one of the regular Premier ones, but a special type which was being experimented with. In addition to this time was lost in putting the fan belt on and also in removing a couple of bolts from the mud apron. No. 111 Jewell runabout in the Hower had 5 points added to its previous score, .4 for material and 4.6 for labor, and No. 107 Maxwell was penalized 23.5 points, 21 for lateness in checking in tonight, .5 for material and 2 for labor.

Details of Day's Trip

Today's run led through the most fertile stretches of Kansas, with the roads continuously bordered on either side with fields of wheat or corn. Like yesterday the roads are roads every foot of the way and not the two sandy furrows of the plain which the tourists became so familiar with on the last 2 days into Denver and the first 2 out of that city. The plains have been left behind and for the last 2 days of the tour there has been nothing but rich agricultural country, with plenty of motor cars met at every point along the road, and with a dozen or more along the side of the street in every town passed through. At Detroit depot eleven cars of all varieties were lined up; at Junction City more than a score were seen on the street and in every place of 300 or more the cars were in evidence. Topeka with a population of 50,000 has been the biggest center passed through since leaving Denver and here, although none of the cars stopped, the streets were lined with cars and motor enthusiasts. A detour was made in the city in order to pass the factory of the Great Smith car.

The road conditions today were particularly varied for the last day of a Glidden tour. Leaving Salina as far as Chapman they are flat and follow the railroad. In Chapman it was necessary to push on the sides of several cars to get them out of deep ditches that they skidded into, the presence of chains not being sufficient to get them out of these. As Junction City was approached sandy hills were met and from this city to Fort Riley, the largest military fort in the country, is a broad stone road wide enough for three cars to run abreast. This proved a short respite from the mud and one which every driver made good advantage of. Fort Riley is located at the geographical center of the United States and in the valley of the Smoky Hill river, a goodly-sized stream. On a hill just across the road from the fort is a small monument showing the exact geographical center. When passing the tourists only obtained a glimpse of the top of the shaft over the hills. The straight stone road from Junction City leads through the outskirts of the fort, but a detour was made among the buildings

CAR STALLED IN A STREAM ON THE COLORADO PLAINS

THE COSY KANSAS FARM HOME

constituting the officers' quarters and also past the several regimental headquarters.

Six miles further on from Fort Riley and also cozily nestled in the valley of the Smoky Hill river is Ogden, the oldest town in the state of Kansas, and almost midway between the fort and Ogden stands an old two-story gray stone building on the right side of the road with the inscription painted on the stones, "First capital of Kansas, July 2, 3, 4, 5 and 6, 1853." Nothing but the four stone walls, the two end chimneys and the inscription remain to tell of the stormy days when it was the governmental center of a state that today augurs well to be one of the leaders not only in the west but in the entire country. The old building but for its inscription might be passed any day for a deserted roadhouse, as the weeds and shrubs almost obscure the lower story, there is not the semblance of a roof, all of the windows are gone and every vestige of civilization in the immediate vicinity has disappeared. Many of the cars halted for a moment at it. Ogden, the oldest town in the state, is a village and a small one. Had Dai Lewis in his route book not mentioned that it was the oldest town few would have passed through without wondering at the quaintness of the place, the peculiar type of architecture used and the general air of antiquity that pervades it. Ogden is a mere village, but it has all stone houses, which is a very rare condition for a village in that section of Kansas. Some of the buildings are two-story and right on the street, not unlike historic Frederick, Md. The barns are stone, in fact everything is stone in the place. Ogden looks more like an old village of eastern Pennsylvania or Maryland than one of Kansas.

When 67 miles out the first hill of the day was encountered, it being a ¾-mile

IMPROVISED IOWA ROAD AT DENISON

climb from the level of the Kaw river. The hill is a tortuous one, has a very slippery surface and its condition was made worse by a repair job that was not completed on it. The last 20 miles into Topeka were through mud and water, this vicinity having had the hardest rain of the season last night. Fortunately the roads in places have a stone base, which prevented the cars sinking too deeply. In Topeka are upward of 350 cars.

Topography Changes

As soon as Topeka was passed the topography of the country changed and the up-and-down-hill program began and continued without a cessation until Kansas City was reached. The majority of the hills contain shale rock and often the car drops 5 or 6 inches from one ledge to another in making a descent and has to climb these staircases when ascending the hill. Lawrence is the only big town or city between Topeka and Kansas City on the route taken and the 2 or more miles of brick pavement in the city were utilized to the very best advantage by all of the cars and the good citizens were apparently overjoyed to see the bursts of speed that many of the cars showed through the place. These good streets proved the trouble point of No. 12 Midland, which on the outskirts of the town struck a large, sharp stone with a rear wheel and besides causing tire trouble damaged the back axle which delayed the car's entry in Kansas City. At this point the car was running ahead of all other contesting machines and was looked upon as the first car to enter Kansas City, but this delay allowed J. S. Williams in his Pierce runabout and W. F. Winchester in the Pierce touring car to get ahead, and which two were along with Motor Age Thomas the first cars to reach the goal of the trip.

PIERCE CREWS AT CONVENTION HALL, KANSAS CITY

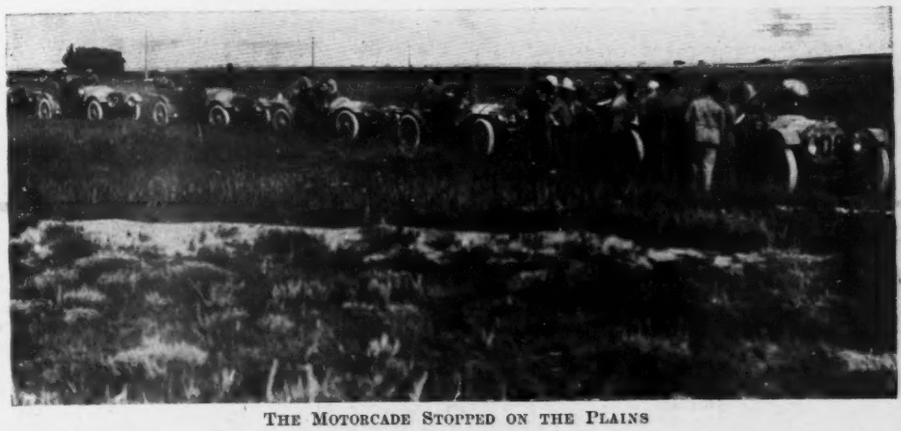
Opinions of the Tour

H. N. Searles, White, said: "This has been a severe test, a contest in which the cars have been forced through difficulties never before experienced to finish with honors above anything expected. The A. A. A. planned a tour to bring forth no perfect scores, yet eight cars had perfect road scores and many more lost but a very few points. It should now be possible to conduct a transcontinental tour with honors possible for all concerned, even though the conditions be made much harder. The present tour has been to me a very agreeable experience, with the exception of the special train in which the men were so herded together as to make things disagreeable."

"The Jewell was comparatively new when I started," said Ollie Bernhart. "In fact it was 2 days old at the time of the start. The tour has therefore been a great success for us as it has demonstrated the fact that we have the right principles. Refinements in the product from this time on will be installed and the experiences of this tour will be incorporated in the cars for other tours of the year. It is our intention to enter in other contests and to keep moving in order that we may have the best car for touring purposes that it is possible to make."

E. O. Hayes, Midland, said: "Yes, it was a hard trip and I am satisfied to have finished let alone win honors. The Midland is ready now to enter for a trip across America and with comparatively few changes. The trip will be made with honors to all concerned another year and experiences learned in this hard journey will make all the difference in the world. The long hard days, the rough roads, the stiff schedule and the going into unknown dangers over the treacherous roads was an experience I shall never forget."

Webb Jay, Premier, said: "I've not competed in tours since 1906 and the great improvement in the cars must be more evident to me than most any one else. Going back to 1903 on a schedule of 12 miles per hour we made wonderful performances and the distances were short each day. We were given until midnight to finish then, too. On the second day of that run nine of forty-two cars only were able to check in before midnight. Now is the schedule different for a 212-mile run in the rain over rough roads is required in schedule time of 20 miles per hour and the cars make it. The strides are so remarkable that I wonder at the improvements myself, and cannot seem to realize just where the great improvements have been made within so short a time. This tour was harder than any other, so they say, and to me it was a long step from 1906 to 1909. In addition to making schedule a severe technical examination is being forced upon all of us and the penalizations have been for the most part of a trivial nature, where in the 1903 contest there was to have been a technical examination, which never came off."



THE MOTORCADE STOPPED ON THE PLAINS

AN EARLY MORNING SCENE AROUND A PARKING SPACE ABOUT STARTING TIME

How the Gliddenite Hosts Were

KANSAS CITY, MO., Aug. 2—Although the spirit of entertainment in Kansas City was as great as that in Detroit, Minneapolis or Denver, yet the conditions were most adverse, with the result that few of the pre-arranged plans were carried into effect. The end of the tour is a poor point for entertainment and Kansas City proved particularly poor in that the technical examination, which continued all day Saturday and Sunday, necessitated all the drivers, observers and mechanics spending this time in Convention hall where the cars were stored and where the examination of them by Messrs. Tracy and Souther took place. Because of the fact that the complete examination of one car at a time was not followed made it still further impossible for any of the drivers or observers to leave the building. The policy followed in the examination of the technical committee was first to examine all the steering gears; following this came an examination of the wheels which was followed by careful inspection of the running gear; next came an outside test of the motor, and in turn came the inspection of the frame and chassis parts. This little-of-each-car-at-a-time method made it compulsory for the entire Glidden force to spend Saturday and Sunday until 1 o'clock around Convention hall, during all of which time the Kansas City club and motorists were ready to take the tourists to the different points of interest around the city and give them a genuine Missourian entertainment.

The entertainment feature commenced Friday evening at the Coates house within 4 or 5 hours after the first car checked in with a Dutch lunch banquet which half of the tourists accepted, the other half being too tired after the strenuous day's mud-plug to attend. The mayor of Kansas City conferred the freedom of the city on each individual tourist by having presented to each a booklet, on the first page of which the freedom of the city and the keys were extended.

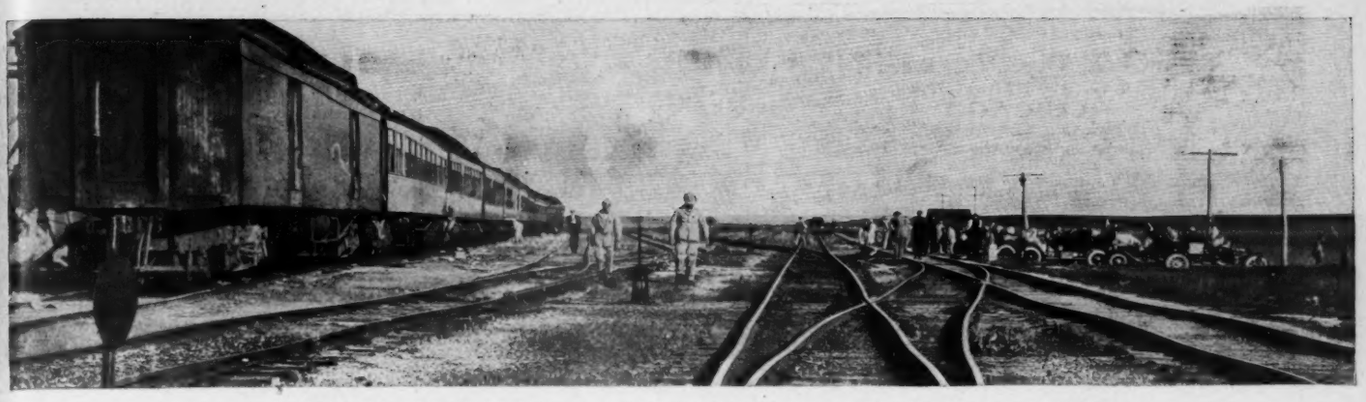
Saturday morning all was alert around headquarters. The chairman on the previous evening had announced that those who were not at Convention hall at 8 o'clock when the technical examination was due to begin would not be admitted and their entry disqualified. The threat had the desired effect and everybody but the chairman was on time. The first orders were to admit only the driver, mechanic and observer of each car to Convention hall, but soon factory representatives who had come to look after their interests in the examination were filling the space on Convention hall floor around the cars, making it impossible for the technical committee to carry on the work with any dispatch. As a result all of those present were asked to take the rows of boxes surrounding the car space and each crew with observer was called out when needed, so that thereafter the examination progressed much faster. The work of examination continued without cessation all day and until midnight. It was resumed early Sunday morning, when the measurement of the frames was taken up. The first car to be freed from Convention hall was No. 108, J. S. Williams' Pierce-Arrow, the winner of the Hower trophy. After this cars were moved out one at a time and when the last one was completed at 1 o'clock the hall was immediately cleared and nothing remained but the announcement of the final scores before the tour would become a matter of history. It was exactly 5:30 when the chairman handed out the final standing of the different contestants at the Coates house, and in less than 5 minutes a large fraction of the tourists were leaving on the 6 o'clock trains for points east and very few remained in the city after the late trains had left.

WEBB JAY AND H. O. SMITH

TOURISTS PASSING THROUGH A KANSAS TOWN

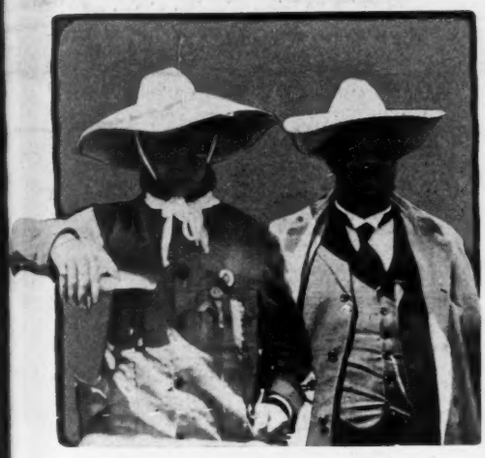
Racing at Elm Ridge

The most pretentious entertainment offered the tourists were the races at the 1-mile Elm Ridge track Saturday afternoon, which were witnessed by upward of 10,000 people. The contests were billed to start at 11 o'clock, when a 100-mile race was scheduled, but owing to the heavy downpour of Friday evening, which left the track a sea of mud, it was necessary to postpone the start 1½ hour, during which time 100 or more pleasure cars were kept circling the track to dry the mud. Much of the interest in the races was killed by the fact that nearly every one was a walkover, the winner being miles



At Each Night Stop the Glidden Pullman Train at One Side and the Cars Opposite

Well Entertained at Kansas City



S. B. Stevens and C. J. Glidden

ahead in some cases at the finish. The chief attraction was the 100-mile event, which brought out seven starters—R. Burman in a Buick, G. M. Breed in a Buick, O. F. Snicler in a Great Western, F. C. Schrader in a Petrel, C. F. Dinkledge in an Auburn, all of which finished the contest, and the Moon and Maxwell, which were withdrawn before the race was half over. The event was a runaway for Burman in his Cobe trophy car, which is a special racing machine with perforated pistons and other special features, and is a 1910 model known as 16 B. Burman had three cases of tire troubles in the run. Breed carried off second honors. The most interesting phase of this race was the duel between the Great Western and the Petrel, both of which cars ran with remarkable regularity for the entire race, the Great Western winning third place. The two-cylinder Auburn made a creditable performance. The Moon car fought a continual duel with Breed's Buick for second place up until the time it was withdrawn, and the running of the Maxwell car was almost a feature until its withdrawal.

One hundred mile race for gasoline stock cars; unrestricted—Robert Burman, Buick, won; time, 1:54:08. G. M. Breed, Buick, second; time, 2:02:48. O. F. Snicler, Great Western, third; time, 2:13:13. F. C. Schrader, Petrel, fourth; withdrawn. C. F. Dinklage, Auburn, fifth; withdrawn. Moon and Maxwell cars withdrawn.

One-half mile obstacle race for electric victorias and coupes driven by women; prize, a $350 Parisian gown—Mrs. W. S. Hathaway, Detroit electric, no barrels knocked over, won; time, 2:01. Mrs. W. G. Whitcomb, Columbus electric, no barrels knocked over, second; time, 2:15. Mrs. N. M. Scott, Baker, no barrels, third; time, 2:17. Mrs. A. O. Brooks, Fritchie, no barrels, fourth; time, 3:03. Mrs. J. B. O'Bear, Detroit, no barrels, fifth; time, 3:04½. Miss Laura Smith, Detroit, no barrels, sixth; time, 3:17. Miss Gail Cherry, Rauch & Lang, one barrel, seventh; time, 2:10. Miss Ollie Borders, Columbus victoria, eighth; time, 2:15. Miss Margaret McFadden, Babcock victoria, one barrel, ninth; time, 2:32. Miss Gertrude Smith, Woods, one barrel, tenth; time, 2:35½.

Five-mile race for gasoline stock cars costing $1,000 and under; no restrictions; prize—Robert Burman, Buick, won; time, 5:16. G. M. Breed, Buick, second; time, 6:36. C. Levendoski, Maxwell, third; time, 6:42. Hupmobile and Maxwell called off after finish of Maxwell.

Ten-mile race for stock cars costing from $1,001 to $2,000; no restriction—Robert Burman, Buick, won; time, 10:02 1-5. G. M. Breed, Buick, second; time, 10:24. A. O. Brooks, Stoddard-Dayton, third; time, 10:46. Petrel and Great Western withdrawn.

Ten-mile Board of Trade cup race for gasoline or steam stock cars; no restriction; annual event—Robert Burman, Buick, won; time, 10:13. G. M. Breed, Buick, second; time, 10:18. Virgil Green, Knox, third; time, 10:25½. Great Western and Moon withdrawn; Stoddard-Dayton and Acme called off.

Special 5-mile Muehlebach challenge race for privately-owned cars; prize, $650 silver loving cup—A. O. Brooks, Stoddard-Dayton, won; not privately owned. H. H. Holtzhauer, Pope-Hartford, second. A. E. Dale, Acme, third. No time was taken as most of timers and all judges had left. A Moon, entered by C. B. Merrill; a Stoddard-Dayton, by Gail Southwell, and a Haynes, by Berlin Boyd, did not start.

Other Entertainments

Saturday evening a Dutch luncheon was served to all the tourists who could get away from Convention hall at Electric park and free admissions given to all the entertainments offered. Sunday forenoon those who could get away were taken by Kansas City motorists for a drive around the boulevards, including the cliff drive which is one of the show points of Kansas City and one of the most interesting city drives in the west. The drive winds along the cliffs overlooking the river valley, the rocky cliffs arising 50 or 60 feet high on one side and the descent to the river flats being 100 or more on the other side. The 250 miles of oiled macadam roads in Jackson county, in which Kansas City is located, proved a revelation to the tourists, as did the 75 or 80 miles of well-oiled macadam boulevards in the city which lead through the best residential districts as well as through the parks and suburbs.

Kansas City as a motoring center dates back not more than a couple or 3 years, at which time the real spirit of the car took possession of the city, and now it is ranking third as a distributing point in the country. The many hills of the city make it an ideal spot for demonstrating, and makes of cars, which find it easy selling in level cities, have a more difficult problem in Kansas City. Practically all makes of cars are represented, a great many having exclusive agencies and other makers handling two or three lines. Like in Denver, a Kansas City dealer has a bewildering distributing territory, extending in some cases 500 miles in several different directions from the city.

Midland Car, First Contestant Into Topeka

Published Weekly
The CLASS JOURNAL COMPANY
1200 Michigan Avenue
CHICAGO
New York Office, 239 West 39th Street

MOTOR AGE

Subscription Rates
United States and Mexico, per year, $3.00
Other countries including Canada, $5.00

Entered as Second-Class Matter September 19, 1899 at the Postoffice at Chicago, Illinois, under Act of March 3, 1879

The Car and the West

THE west, with nothing but natural roads, has never been considered until the present year a suitable field for the motor car, but this great westland is proving itself to be another paradox, and although it has not roads of macadam or gravel it is absorbing more cars already than many eastern areas where the population is several times greater. The west is peculiarly suited for the car; distances between towns are greater than in the east and there is no mode of locomotion other than the railroad. In the east and central states the interurban electric line threads many of the prettiest sections of the country, so that it is possible to view many of the beauty spots as easily from the electric car as it is from the motor car. This is particularly true of the Berkshire district in Massachusetts. But there is another reason why the west is better adapted to buying cars than the east. In the western city and town, surrounded on all sides by agricultural lands, there is no diversity like the seashore resort, the motor boat, and the electric park such as the east abounds with, and the result is that the people of wealth in these centers must have a car if they want any source of entertainment during the hot summer months. They have not a motor boat, there is no place to use one; in short, the only form of recreation at hand is the car. Already the people in these territories have not been slow to appreciate this, and the result is that not a few towns and cities have one car to every seventy-five or 100 population. In the villages this percentage is greatly increased, there being examples of twenty cars in a village of less than 500 population, or a percentage of one car to every twenty-five people. This state of affairs, coupled with the almost inexhaustible agricultural resources of the west, will always keep this section of the country in the van as a motor buying district; and those the country in the van as a motor buying district.

The Reliability of the Motor Car

THE days when a prospective buyer of a car would ask if the machine could perform satisfactorily on rough roads, if it could carry its load through sandy districts, if it could climb steep hills, or if it could go through streams in case bridges were broken down, are now over, and today with the buyer the great problem is what is the most car he can secure for the least outlay. Particularly is this true with the medium-priced car. The doubt in the buyer's mind as to what a car will and what it will not do has been largely dissipated by the continual program of contests which the American manufacturer has participated in during the last couple of years. Within that time there have been reliability runs by the score, hill-climbs by the dozens, and not a few economy tests. The reports of these, published throughout the country in the class and daily press, have been constantly impressing on the public the prowess of the car, until today it is an undisputed fact that the motor car can accomplish what no other vehicle of locomotion can. On the present Glidden tour eight of the thirty cars made the entire journey of 2,640 miles without an adjustment, except on the brakes, carbureter and ignition parts as permitted in the rules. This meant that the motors, transmissions, axles, driving parts and running gears made this entire distance without a wrench or hammer of any nature being used upon them. What other vehicle of locomotion at the present day has a record that can in anywise compare with this? The locomotive makes a double century, or 300 miles at most, and is sent to the roundhouse, where it is overhauled; but in the present Glidden all of the cars made the 15 days running, averaging aproximately 20 miles an hour without garaging.

The Road-Hog Driver

ALTHOUGH volumes have been written on the selfishness, the meanness and the dangers of the actions of the road-hog driver that undesirable personage still exists, and still continues to engender antipathy to the motoring cause in whatever sections are unfortunate enough to have him. It has been generally conceded that the root of the trouble in the road hog has been selfishness and meanness, but it is a debatable point if it is not laziness which is at the root of the disease. The commonest example of road hogging is the driver who fails to give his due share of the road, when meeting another motor car or horse vehicles traveling in the opposite direction. It is a common practice with this undesirable motoring personage, when meeting a horse vehicle traveling in the opposite direction, to hold the center of the road until within a short distance of the horse vehicle, by which time the driver has driven his team into a ditch in order to avoid what he considers imminent danger, and as soon as a short distance from the horses' heads the road hog veers suddenly to the right and passes without even reducing speed. It is acts of this nature that antagonize the motoring cause and result in hostile legislation at the annual meetings of state legislatures and for which the car owners have to pay thousands of dollars to fight. The driver who continues in these selfish road acts is working a great injury to the industry, because every time he is guilty of this offense he has added one enemy to the pro-motorists or at least aroused a storm of opposition against the cars. In the mind of the driver it may be all right to hold the center of the road until close to the approaching team, but to the driver of horses it is otherwise. He is not familiar with the quick control of the car and imagines it should start pulling to the side at the same time he does. If the horse driver understood this there would be less opposition and less antagonism to the car. In time the horse driver will become aware of this, but until such time it would be of vastly more benefit to the industry if all drivers would bear in mind the ignorance of the horsemen and show that road courtesy of slowing up and giving half of the road.

The Good Road Demonstration

A COMMENDABLE work is being done in several states where good roads are not as common as in the east by the motor clubs and certain enterprising individuals, who through their influence have been able to secure legislative grants for the construction of short stretches of road, which are to be used as samples, and from which are studied the lessons of road building, of road repairing, as well as the weaknesses of certain road material. No better method of educating the people than this can be found. One county in Minnesota has secured a legislative grant of $1,000,000 for the purpose of building such sections of road which are to be studied and approved upon and incorporated into the general highways of the state. In this particular case it would have been impossible for the motor club of Minneapolis to have obtained the grant because of the hostility of the legislator, but this work was accomplished by individual enterprise, and it promises to be the nucleus of an appropriation of millions that will be made for roads in that state within the next 10 years. It is most unfortunate that the richest farming lands in the country should be without improved roads on which to market the produce and it will call for considerable individual sacrifices before the road movement is properly launched in several states, but once started and the agriculturists have seen the direct benefit to them of good roads they will assist.

TIRE STORY OF THE SIXTH GLIDDEN TOUR

THE tire story of the tour is a brief one as far as the majority of cars is concerned, but two or three of them had quite a few punctures and others had an unnecessarily large number of blowouts. Where punctures occurred nails played a large part, and where there were not nails there is good reason that the trouble was due to too hasty putting on of the tires. Not a few of the cars finished with the original air in that they started with from Detroit on two or three of the tires, and quite a number did not require to use new casing on the entire trip. Winchester's winning Pierce, as did all four of the team, finished with the original Buffalo air in three of the tires. Winchester had two punctures, F. S. Dey driving No. 8 had one, J. S. Williams, the Hower winner, had two on the run from Omaha to Kearney, but not one of the four Pierce entries used a new casing, except in Winchester's case, where on was used for 50 miles into a night stop.

Troubles of Others

Harry Hammond, driving Premier No. 2, which carried off second Glidden honors, suffered one puncture, two blow outs, and used a couple of new casings. No. 1 Premier was less fortunate, Webb Jay, the driver, having no fewer than four blowouts and three punctures and requiring four new casings. No. 5 Marmon, a perfect road score car in the Glidden, had a couple of punctures, but did not use a new casing. No. 4, Frank Wing's Marmon, had four punctures and needed a couple of extra casings. No. 10 Glide's

Long Journey Demonstrates Western Roads Are Easy on the Motor Car Pneumatics

tire story is a couple of punctures, one entering at Mankato and the other in the vicinity of Salina. One new casing was required. No. 6 Maxwell experienced two punctures and used two new casings, both on the rear, but the car came through with the Detroit air in the front tires. No 7, Jewell, had five punctures and used five new casings. A couple of this car's tire troubles were due to taking corners too quickly with the result that the tires were rolled off. No. 9 had two punctures, both on the right rear, but did not have to use any new casings.

In the ranks of the Hower tourists the tire troubles were about on a par with those in the Glidden. Moline No. 100 had two punctures and did not use a new casing; Moline, 101, had the same tire story; No. 102, Moline, had a couple of punctures and used one new casing all on the right rear wheel, the three other tires having the original Detroit air in them. Chalmers 105 had four punctures, all due to nails and two of which occurred on the last day's run into Kansas City. A new casing was not used on this car. No. 112, Mason, had five punctures and used one new casing. No. 111, Jewell's, tire troubles consisted of four punctures, but did not have to use a new casing. No. 114, Lexington, had but one puncture during the entire trip and finished the run without having to inflate the front tires.

In the Detroit trophy end of the contest No. 52, the winning Chalmers, had one puncture and four blowouts, three of the blowouts taking place on the afternoon's run into Kansas City; only one additional casing was required and Detroit air remained in a couple of the tires. No. 51 American Simplex had two punctures, one in to Fort Dodge and the other at Kansas City. A new casing was not required. No. 53 Premier had one blowout on the last day and one puncture on the left rear.

Goodrich tires were used on the Winchester's Pierce, winner of the Glidden; No. 108, Williams' Pierce, winner of the Hower, and No. 2 Premier, which finished with second honors in the Glidden, and No. 101 Moline, which finished second in the Hower. Bemb's Chalmers-Detroit, which won the Detroit trophy, was equipped with Diamond tires. The original count made by Motor Age at the start of the tour shows twelve of the thirty contesting cars equipped with Goodrich tires, eleven with Diamond tires, four with Ajax, one with G & J, and one with Goodyear. Hartford shock absorbers were used on six of the eight perfect score cars, the two perfect score Premiers being without shock absorber equipment. The Bosch magneto was the electric equipment on all of the eight perfect score machines. Of the eight cars to finish with perfect road scores, the four Pierces used their own make of carbureter and Scheblers were used on the other four, namely, two Premiers, Marmon and Moline.

DAY BY DAY PROGRESS AND FINAL SCORES OF CARS CONTESTING IN SIXTH ANNUAL GLIDDEN TOUR

GLIDDEN TROPHY CARS

No.	Car	Driver	No. of Cyls.	Motor B.	Motor S.	Motor H-P	1st day	2d day	3d day	4th day	5th day	6th day	7th day	8th day	9th day	10th day	11th day	12th day	13th day	14th day	15th day	Road Total	Tech. Total	Grand Total
9	Pierce-Arrow	W. Winchester	6	4½	4¾	....	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	Premier	H. Hammond	4	4½	5¼	....	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.5	1.5
8	Pierce-Arrow	F. S. Dey	6	4½	4¾	....	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.6	1.6
5	Marmon	H. C. Marmon	4	4½	4½	32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7.3	7.3
4	Marmon	F. E. Wing	4	4½	4½	32	0	0	0	0	0	0	0	8	0	0	0	0	0	0	0	8	2.5	10.5
6	Maxwell	E. G. Gager	4	4¾	4¾	....	0	0	0	0	0	0	0	0	0	0	0	0	8.5	0	0	8.5	4.6	13.1
1	Premier	Webb Jay	4	4½	5¼	....	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16.8	16.8
12	Midland	E. O. Hayes	4	4½	5¼	....	0	0	0	3.7	0	0	.6	0	0	0	0	0	0	0	0	4.3	31.3	37.6
14	White	H. N. Searles	2	3x4½ 5x4½		†	0	0	0	0	0	0	0	0	0	0	0	18.2	0	.4	.7	19.3	26.2	45.5
7	Jewell	O. P. Bernhart	4	4¾	5	....	0	0	0	0	0	0	0	8.8	0	.1	2.3	0	0	0	0	11.2	394.8	406
10	Glide	A. Bartholomew	4	4¾	5	....	0	0	0	0	0	0	0	2.6	0	9.2	119.3	28.8	247	276	0	682.9	6.5	689.4
11	Thomas	G. G. Buse, Jr.	6	5½	5½	70	0	0	0	0	0	0	0	0	0	0	1	0	1000	Wit	hd'n	.....	.....	1001
3	Chalmers-Detroit	Wm. Bolger	4	5	4¾	40	1	.4	0	0	0	1	204	19.1	1000	Wit	hdre	w.	.....	.....	.....	1225.5	.....	1225.

†Steam

DETROIT TROPHY CARS

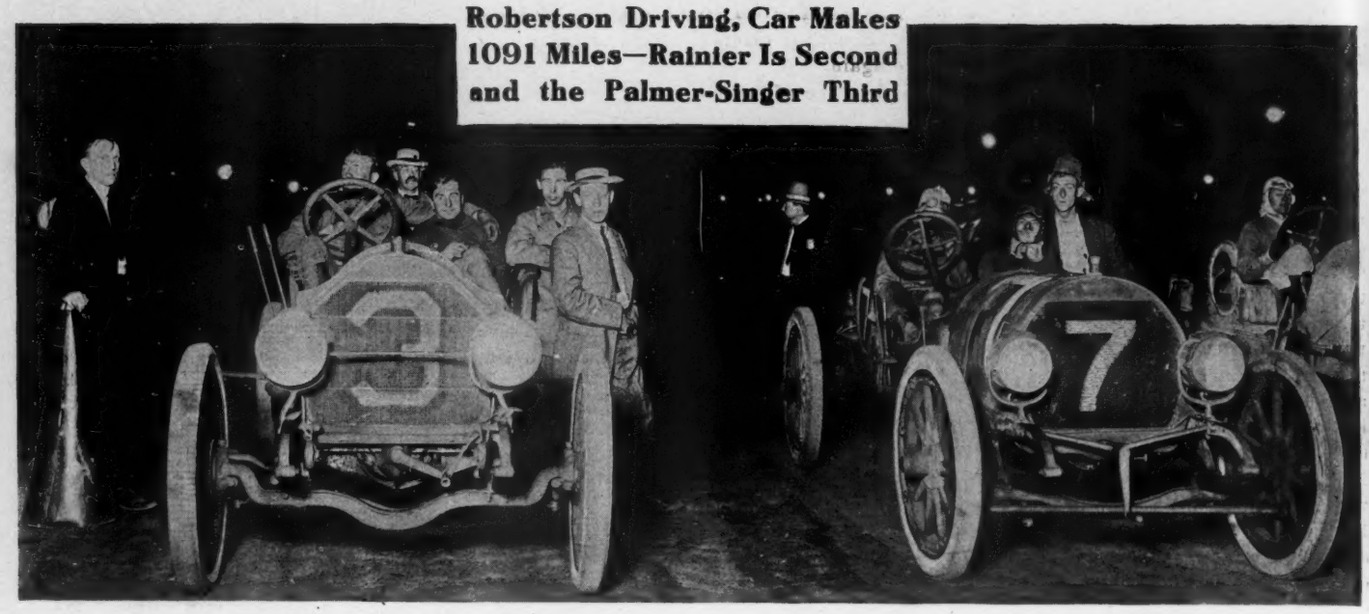
52	Chalmers-Detroit	Jean Bemb	4	5	4¾	40	0	0	0	0	0	0	0	0	6	0	0	0	0	0	0	6	17.8	23.8
53	Premier	C. Waltman	4	4½	5¼	....	0	0	0	0	0	0	0	.8	0	0	0	0	0	5	20.3	26.1	8.2	34.2
51	American Simplex	W. A. Woods	....	5	....	5	0	0	0	0	0	0	0	0	0	0	0	1.4	0	0	0	1.4	50.8	52.3

HOWER TROPHY CARS

108	Pierce-Arrow	J. S. Williams	6	4	4¾	....	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
101	Moline	J. A. Wicke	4	4½	5	....	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.1	1.1
114	Lexington	J. C. Moore	4	4¾	5	....	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1.8	3.8
100	Moline	C. H. VanDervoort	4	4½	5	....	0	0	0	0	0	0	0	3.1	0	0	0	0	0	0	0	3.1	5.2	8.3
109	Pierce-Arrow	C. Schofield	6	4	4¾	....	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10.2	10.2
107	Maxwell	C. E. Goldthwaite	4	4¼	4¼	....	0	0	0	2.6	0	0	1.6	0	0	0	0	0	7.7	0	23.5	35.4	8.2	43.6
102	Moline	W. S. Gregory	4	4½	5	....	0	0	0	0	0	0	0	16.1	0	1	0	0	0	0	29.5	46.6	2.8	49.4
111	Jewell	J. Shimp	4	4¾	5	....	0	0	0	9	6	5.8	0	8.4	1.4	0	0	0	0	2.6	5	38.2	69.6	107.8
112	Mason	R. Snyder	2	5	5	20	0	0	0	4.3	0	0	0	0	0	0	0	0	330.2	0	0	.....	10.3	344.8
103	Brush	F. A. Trinkle	1	4	4½	....	0	.4	0	3	2.2	1000	Wit	hdra	wn.	Cont	'd as	non-	cont	esta	nt.	.....	.....	1005.6
106	Hupmobile	F. Steinman	4	3¼	3½	16.9	0	0	0	358	1000	Wit	hdra	wn.	Cont	inue	s as	non-	cont	esta	nt.	.....	.....	1358
110	McIntyre	F. Goodwin	2	4¾	4¾	....	29	423.7	1000	Wit	hdra	wn.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1452.7
104	Brush	D. B. Huss	1	4	4½	....	40.8	149.3	423.6	343.9	294	1000	Wit	hdra	wn.	Cont	'd as	non-	cont	esta	nt.	.....	.....	2251.9
105	Chalmers-Detroit	J. Mackesky	4	5	4¾	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Disq	ualifi	ed	.....

Simplex Lands Brighton Beach 24

Robertson Driving, Car Makes 1091 Miles—Rainier Is Second and the Palmer-Singer Third



ROBERTSON AND POOLE IN WINNING SIMPLEX AND DISBROW AND LUND IN RAINIER

NEW YORK, Aug. 1—Sport lovers of the metropolis turned out 15,000 strong to see George Robertson and Al Poole with the Simplex win the Brighton 24-hour race last night. The score was but 1,091 miles, 86 miles below last year's record. The Rainier, driven by Disbrow and Lund, after a steady and consistent performance, finished second, with 1,041 miles to its credit. The Palmer-Singer, another conservative, made 968 miles under the guidance of Howard and Lescault. The Stearns and the Lozier, after providing most of the excitement and fast driving, had to be content with fourth and fifth, respectively, their scores being 919 and 885 miles. Fiat and Haynes did not finish.

Robertson was picked to win before the start, and was the favorite. After the Fiat met with an accident early Saturday morning he had a long lead over all the other competitors, and settled down to a steady grind. Had it not been for the exciting brush between the Stearns and the Lozier in the last few hours the race would have been very dull. But these two, although they had long given up all hope of winning, set out to show a little speed, and succeeded beautifully. They lapped the leaders time and again, and drew forth the only real enthusiasm of the day.

Big Crowd Sees Start

The race began at 9:05 Friday night. The stands were crowded, and a solid row of cars lined the parking enclosure. In the glare of electric arcs and calcium lights it made a very picturesque and exciting scene, just the sort to attract the evening crowds at Brighton and Coney Island, as well as the more fastidious motoring contingent. This was the line-up:

1—Acme 60, Cyrus Patschke and H. A. Vantine.
2—Lozier 50, Ralph Mulford and Harry Cobe.
3—Simplex 50, George Robertson and Al Poole.
5—Stearns 30-60, Laurent Grosse and J. B. Marquis.
6—Palmer-Singer 60, Ray Howard and Frank Lescault.
7—Rainier 45-50, L. A. Disbrow and Charles Lund.
8—Fiat 45, Ralph de Palma and E. H. Parker.
9—Haynes 36, Frank Swelgert and John Looney.

Robertson made the quickest start and took the rail on the first turn, closely followed by the Stearns, and held the lead for 6 miles. Then the Stearns drew ahead. Its time for the 10 miles was 11:29⅘. On the twenty-third lap it met with trouble and retired to the paddock, leaving the Fiat in the lead with Simplex second. De Palma made 53 miles in the first hour. About midnight the Stearns, which had returned to the track, met with the accident that put it out of the running. Marquis had just relieved Grosse at the wheel, and on his first lap, driving fast to catch

SCORE IN DETAIL OF THE 24-HOUR RACE AT BRIGHTON

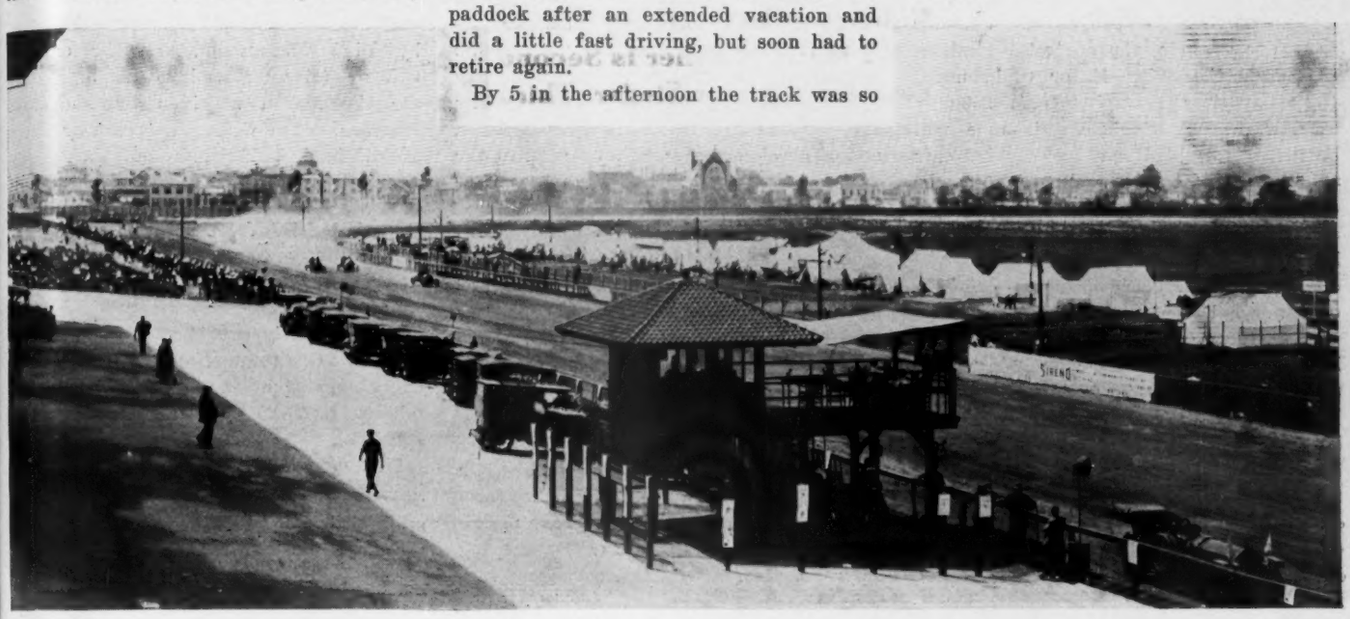
Car. Hours—	1	2	3	4	5	6	7	8	9	10	11
Simplex	47	102	153	197	246	295	343	391	440	490	539
Rainier	46	95	143	193	238	287	331	372	421	467	513
P.-S.	45	90	136	178	224	264	305	348	386	427	472
Stearns	51	101	141	141	141	182	228	273	299	353	362
Lozier	48	95	138	176	219	267	298	298	317	323	371
Acme	41	87	123	129	158	199	222	232	283	310	310
Fiat.	53	104	154	204	254	292	343	366	391	440	486
Haynes	41	86	122	122	122	122	122	122	122	122	144

SCENE IN FIAT CAMP WHILE TIRE IS BEING CHANGED

up with the leaders, he took the turn into the homestretch at such speed that his car turned turtle. Robertson was just behind, and had to do some quick work to avoid running into the wreck. Neither Marquis nor Lang, his mechanic, was seriously hurt.

The Fiat had tire trouble at intervals, and finally hit a fence post, which strained the front axle. As it fell behind the Simplex drew further and further into the lead. On the tenth hour it was 23 miles ahead of the Rainier, now in second place, and 50 miles ahead of the Fiat. The Rainier was running steadily, but had not the speed to overhaul the red car. From this time on the race was featureless. In the afternoon the Acme came from the paddock after an extended vacation and did a little fast driving, but soon had to retire again.

By 5 in the afternoon the track was so badly cut up on the turns that the race had to be stopped while repairs were made. The management had advertised that the race would be run without intermissions, but they claimed that the police demanded that the track be put in better shape. The turns at each end of the homestretch had been worn into deep ruts, and the dust was blinding; the only part in condition for fast time was the backstretch. The intermission lasted an hour, during which the cars were kept in control and no working on them was permitted. The drivers, however, were glad of a chance to rest.



GENERAL VIEW OF BRIGHTON BEACH TRACK DURING PROGRESS OF 24-HOUR RACE

When the race was started again only five cars were in line. The Haynes had quit in the fourteenth hour with a broken crankshaft, and in the seventeenth the Fiat's damaged axle forced it to retire also. The Acme was in the paddock, but not officially out. Poole, now in charge of the Simplex, set a pace of about 35 miles an hour, and the Rainier and Palmer-Singer, now sure of second and third places, respectively, followed him. This was good generalship, but not calculated to please the crowd. The Stearns, however, gallantly started to furnish some excitement, and in this entertaining effort it was soon joined by the white Lozier. In the darkness the two tore around the track at real racing speed, repeatedly passing the trio of conservatives and drawing hearty applause from the grandstand.

When only a quarter of an hour remained Robertson again took the wheel of the Simplex and undertook to win a share of the applause. He reeled off some fast miles, and by his example aroused the Rainier and the Palmer-Singer, so that at its finish the race was quite exciting.

The usual preliminary events on Friday afternoon furnished several accidents.

Summary of Preliminaries

Ten-mile motor cycle handicap—Stanley Kellogg, Merkel, won; time, 10:16 2-5. J. F. McLaughlin, N. S. U., second; F. B. Baker, Indian, third.

Mile time trials—Ralph de Palma, Fiat, won; time, :54 3-5. Louis Chevrolet, Buick, second; time, :58 2-5; Charles Bowers, Red Dragon, third; time, 1:06 4-5.

Fifty miles, cars $1,251-$2,000—Louis Chevrolet, Buick, won; time, 59:39 2-5.

Five miles, free-for-all—Ralph de Palma, Fiat, won; time, 5:51 3-5; Charles Bowers, Red Dragon, second.

Five miles, cars $851-$1,250—Walkover for E-M-F.

Brighton Marathon, 100 miles, cars $2,001-$3,000—Lee Lorimer, Chalmers-Detroit, won; time, 1:52:00 3-5. John Juhasz, S. P. O., second. W. O. Stokes, Midland, third.

ACH WON BY ROBERTSON AND POOLE IN A SIMPLEX

13	14	15	16	17	18	19	20	21	22	23	24
636	680	724	765	811	855	896	938	980	1017	1052	1091
601	644	685	724	766	813	852	888	927	968	1001	1041
543	589	628	668	706	745	789	820	862	895	930	968
466	505	551	597	645	685	729	760	769	797	805	885
310	320	320	322	322	322	352	385	385			
580	623	654	678	691							
205	219										

TIRED SPECTATORS REST DURING DULL PERIOD

QUAKERS WILL RECEIVE FOREIGN ENTRIES

PHILADELPHIA, Pa., Aug. 2—After thoroughly considering the question from every angle, the contest committee of the Quaker City Motor Club, under whose auspices next October's 200-mile Fairmount park stock chassis race will be run, has decided to accept foreign cars as entrants, with the proviso that they be owned by Americans. The committee was about evenly divided as to the advisability of this action, but when the fact was emphasized that the exclusion of foreign cars would be interpreted by some to a fear of the result, the antis flopped over in a body, and the final vote in favor of their admission was practicall ananimous.

The race will be run on Saturday, October 9, probably in the afternoon. Twelve hundred of Philadelphia's finest, with miles of rope, will furnish a replica of the course-guarding which so surprised and delighted visitors last year and set a standard in this respect which many race promoters have vainly endeavored to equal.

Mayor Reyburn, who, with Frank B. Hower, of the A. A. A., has been named as honorary referee, is intensely interested in the affair, and is devoting no little time to perfecting the details. The committee which will represent the club in its dealings with the representatives of the charitable institutions which will participate in the distribution of the receipts consists of Frank Hardart, Sr., chairman; Fred C. Dunlop and William J. Donnelly. The following institutions have been named as equal beneficiaries: Rush Hospital for Consumptives, Pennsylvania Society for the Prevention of Tuberculosis, Children's Aid Society and the White Haven sanitarium. The mayor will name a committee, consisting of eminent citizens interested in the above-named institutions, which will collect the receipts from the sale of grand stand and box seats, parking spaces, etc., appoint sub-committees to lift the small contributions which will doubtless pour in from the hundreds of thousands of spectators now that the race has taken the shape of a monster benefit toward the fund for fighting the white plague; and thus allow the Q. C. M. C. contest committee to devote its entire energies to making the race itself a success. Preparations are in progress to auction off boxes and choice seats in the main grand stand; by this means a big boost will be given the receipts.

That local society is beginning to manifest interest in the affair was evidenced Saturday last when an even $100 made up of five separate unsolicited contributions, came into the committee and was promptly handed over to the mayor, who will in turn transfer it to the commitee representing the beneficiaries. Chairman Hardart believes that with clear weather the receipts will aggregate between $20,000 and $30,000, thus making it the largest charitable affair in the history of the city.

Not only will the Quaker City Motor Club not benefit financially from the sale of parking places, seats, etc., but the club has asked for the reservation of fifty parking spaces at the rate decided upon by the beneficiary institutions' commitee, and a check therefor will be sent to the proper person as soon as the mayor names the committee.

The contest commitee finally decided on the disposition of the $5,000 cash—or plate, at the winners' option—which will be distributed among the first four cars to finish, as follows: $2,500 to first, $1,250 to second, $750 to third, and $500 to fourth. In addition there is also heard from some of the public-spirited laymen who have already become deeply interested in the race and its charitable feature, a suggestion that additional enthusiasm might be aroused by newspapers, prominent business concerns and others hanging up trophies for fastest lap, consistent running, best tire record, etc. This suggestion has already been acted upon, and there will be at least two such trophies in addition to the $5,000 in frigid gelt which the club has hung up.

Saturday, just 1 day after the entry blanks were mailed, Secretary Harry Harbach received the first entry—that of an Acme car, with Malin Leinau nominated as the driver.

CHEYENNE PREPARES FOR MEET

Cheyenne, Wyo., Aug. 1—A meet is planned for August 17, under the management of the Cheyenne Motor Club, when the 4-mile race track here will be completed. The Cheyenne club has spent thousands of dollars putting the course in shape. The track is exactly 4 miles long and is shaped somewhat like a letter D, the most abrupt turn being only about 4 per cent. The track is around Sloane's lake and a view of the entire course may be had from the grand stand, thus giving the spectators opportunity to witness the races from start to finish. The grand stand is an immense steel and concrete structure seating 7,000 persons. It has two tiers of seats, with a number of boxes for private parties. Signal posts have been erected every ½ mile along the track, so that the time of the cars may be taken for almost any distance. The big event of the meet will be the 200-mile race for gasoline cars only. This race will be fifty times around the course. The first prize in this event will be $750 in gold. The entry fee for the 200-mile race is $50. Another race of 25 miles for gasoline cars only will precede the big race. An exhibition race of 10 miles for the world's record will be given by George Hering of Denver, driving a Stanley steamer which is an exact duplicate of the steamer driven by Fred Marriott on the Florida beach. Harold Brinker will drive a Moon in the 200-mile and also in the 25-mile event. The Oldsmobile, driven by Martin Fetcher, will be a contestant, and a Thomas, to be driven by Linn Mathewson, may be entered. Other entries received so far in Denver are the Marmon, driven by Morris C. Martin, the two Colburns, driven by Eaton McMillan and Eddie Noyes. The entries close August 7 at 12 o'clock midnight.

FIVE-DAY RUN LAID OUT

Milwaukee, Wis., Aug. 2—The Milwaukee Automobile Club is considering a proposition from the touring board for a 5-day reliability run in the latter part of August. Chairman Drought has mapped out a route that will require an average mileage of 125 miles each day. The schedule:

First day—Milwaukee, south, to Waterford, Burlington, Elkhorn, Delavan, Janesville and Madison; 125 miles.

Second day—Madison, northeast, to Columbus, Beaver Dam, Waupun, Brandon, Ripon, Berlin and Waupaca; 125 miles.

Third day—Waupaca, west and north, to Stevens Point, Grand Rapids, Marshfield, Wausau and Merrill; 125 miles.

Fourth day—Merrill, east, to Antigo, Birnamwood, Wittenberg, Clintonville and Green Bay; 136 miles.

Fifth day—Green Bay, south, to Depere, Wrightstown, Kaukauna, Appleton, Neenah, Menasha, Oshkosh, Fond du Lac, West Bend and Milwaukee; 115 miles.

CHICAGO ROW'S FIELD DAY

Chicago, July 30—The second annual motor row field day took place at Geneva, Ill., yesterday, the tradesmen using the grounds at the Fox River Country Club as the athletic battle ground. More than 100 dealers, their employes and their friends made the 50-mile trip in motor cars and enjoyed a day out of doors. The program consisted of a series of championship events and included golf, trap shooting, baseball, bicycle racing, foot racing, bowling and pool. The golf championship was won by Henry Paulman, the Pierce-Arrow representative; the bicycle race was taken by Harry W. Cooper, manager of the Excelsior Supply Co.'s Michigan avenue branch; the 100-yard foot race by Harry Watts of the United Manufacturers; the trap shooting by Thomas J. Hay, manager of the Ford branch and president of the trade association; the pool championship by F. E. Sparks, of the United Manufacturers; the swimming match by George Gaidzik, Motor Age, and the bowling event by C. G. Sinsabaugh of Motor Age. The Henry Paulman trophy for the all-round championship was captured by Harry Watts because of his victory in the 100-yard sprint and second in the swim.

TEXAN DEFEATS STRANG

Waco, Tex., Aug. 1—The feature of the meet here Friday and Saturday was the 10-mile match race between Lewis Strang in the Buick and Ralph de Heymel in a Stoddard-Dayton, which was won by de Heymel in 10:12, remarkably fast for a ¾-mile track. The Stoddard driver also won the 25-mile handicap from scratch in 26:42.

BIG FIELD IN HILL-CLIMB AT ALGONQUIN

CHICAGO, Aug. 1—As usual the Algonquin hill-climb of the Chicago Motor Club has attracted a big entry, the list for the fourth annual event, which takes place Thursday, showing eighty-five nominations, almost as many as were named for last year's meet, when the record was cracked. Thirty-one makes of cars are represented in this year's list, the nominations being divided as follows: Buick, 10; Stoddard-Dayton, 8; Marion, 7; Oakland, 6; Knox, 5; Maxwell, Stearns and Mason, 4 each; National, Kisselkar and Velie, 3 each; Thomas, Moon, Holsman, McIntyre, Moline, Chalmers-Detroit, Corbin and Locomobile, 2 each; Hupmobile, Petrel, Staver, Grout, Columbus, Detroit, Babcock, Chadwick, Schacht, Monitor, Columbia and Fal-car, 1 each. There are ten amateur entries representing five owners, who will compete for medals and at the same time drive in the open competition. In addition there are special events for motor buggies and electrics. The classification scheme this year is by piston displacement and price and class A and A2 have been worked into a double-header, both time and the club handicap formula being used. In the free-for-all there is a classy field made up of Zengle in the Chadwick six, Merz in the National, Denison in the Knox, Miller and Englebeck in Stoddard-Daytons, Monsen and Stutz in Marions, Greiner in the Thomas six, Schetnitz in the Chalmers-Detroit Forty, Gerdes and Howard in Stearns, and Scott in a Locomobile, and Duesenberg in a Mason. Greiner, Scott, Gerdes, Howard and Schetnitz are amateurs. The two hills will be used as in previous events, both counting in the final results.

MUNSEY TOUR BOOMING

Washington, D. C., July 31—Now that the Glidden tour is over and the pathfinders of the Frank A. Munsey reliability contest, scheduled for September 21-29, to Boston and return, have begun the work of laying out the route for that event, interest in the east's big tour is increasing at a great rate. Twelve entries have been made to date, the additional ones being as follows: Walter Cram, Philadelphia, Mitchell; Carter Motor Car Corporation, Washington, D. C., Washington; Lambert Automobile Co., Baltimore, Maxwell; Baltimore branch Olds Motor Works, Oldsmobile; Sinclair-Scott Co., Baltimore, Md., Maryland.

The pathfinders departed for Boston yesterday in the Chalmers-Detroit Bluebird that blazed the route from Denver to Mexico City, the party consisting of Karl Schnorr, the driver, Thomas S. Rice, George Deatel, and D. E. Taylor. A great crowd of motorists were at the starting point to give the scouts a good send-off, as the fact is recognized that the Munsey tour gives Washington its first opportunity of figuring in a motor car event of national importance.

W. D. West, president of the Automobile Club of Washington, and Isaac Gans, chairman of the motor car floral parade committee of the chamber of commerce, sent the pathfinders away on their journey amid the plaudits of hundreds of motorists and prominent officials and business men. The pathfinders were escorted out of the city by a detail of bicycle policemen and a number of motorists.

President Taft evinced much interest in the pathfinding party when it was presented to him at the White House. The Chalmers-Detroit car was driven to the White House and the scouts met the president just as he was emerging from the executive mansion with Captain Archibald Butt, his military aid, for a trip to the golf links at Chevy Chase. He inspected the car, read the signs attached to it and then posed for a picture. The president was greatly interested in the car's achievements, chief of which was its long journey from the Mile High city to President Diaz' land. The story of this trip was briefly told to him. He then wished the pathfinders good luck and a pleasant trip to Boston and return.

The Munsey tour has received the indorsement of Charles J. Glidden. In a telegram to the managers, dated Hugo, Colo., July 30, Mr. Glidden said in part: "I wish to extend my congratulations to Mr. Munsey in arranging a tour of this character, which will be of unusual public interest, giving the people of the eastern states an opportunity of witnessing a splendid contest between cars under conditions which will be an admirable test of drivers' skill and manufacturers' product. You are sure to have a large number of entries and can expect some from this tour after its finish in Kansas City. The success of the Munsey tour is assured."

POPE RECEIVERS DISMISSED

Hartford, Conn., Aug. 2—In accordance with an order issued by Vice-Chancellor Howell at Newark, N. J., today, the receivership of the Pope Mfg. Co. is now completely disposed of. Vice-Chancellor Howell's order directs that a cash dividend of 41.277 per cent be paid to all holders of first preferred stock of the Pope Mfg. Co. who did not enter into the reorganization scheme. The number of such shares is about 195 and a fraction. Sherrud Depue, who obtained the order as counsel for the receivers, is authority for the statement that there are about twenty shares of first preferred stock represented in part by script and part by certificates of deposit of stock of the American Bicycle Co., which were also entitled to the dividend as above named. The vice-chancellor directed that this all be set forth in an affidavit. The court order dismisses the receivers and orders the cancellation of the receivers' bonds. There was no opposition to the report.

FAST MILE BY CHRISTIE

Detroit, Mich., Aug. 1—Walter Christie dashed around the Grosse Pointe track yesterday afternoon and clipped the track's mile record. On Friday Christie reeled off the circular mile in :57, and the crowd gasped. Saturday afternoon he did still better, rubbing the edges of the fence and having his time announced as 54⅘ seconds. Aside from the driving of Christie in his exhibition mile and the work of the two Chalmers-Detroit Bluebirds in the 50-mile event, yesterday's program was without any exciting frills. Matson and Knipper, the two teammates, sped around the fence fifty times and Knipper led at the finish by ½ mile. Matson tried his best to catch the younger driver, but his machine would not hit the pace that Knipper's held. Knipper made a beautiful drive, his machine consistently doing the miles in 1:07. For 9 miles the machine driven by this man did not vary a fraction of a second on each lap. The summaries:

One-mile exhibition by Joe Matson, Chalmers-Detroit. Time, 1:00 4-5.
One-mile exhibition by Crocker, Peerless. Time, 1:00 4-5.
One-mile exhibition by Oldfield, National. Time, 1:03.
One-mile exhibition by Christie, Christie. Time, 54.3 seconds.
Three-mile event—Knipper and Matson, Chalmers-Detroit. Won by Knipper. Time, 3:25 1-5.
Three-mile sweepstakes—First heat, Oldfield won from Crocker by default.
Final heat—Christie won from Oldfield. Time, 3:15 1-5.
Three-mile handicap—Knipper, 20 seconds, won; Crocker, scratch, second; Matson, 20 seconds, third. Time, 3:27.
Fifty-mile event—Knipper, Chalmers-Detroit, won from his team mate, Matson. Time, 58:13. Matson's time was 58:51.

BLUE BOOK BUYS RED BOOK

New York, Aug. 2—An important deal was consummated last week when the publishers of the Official Automobile A. A. A. Blue Book purchased outright, the entire route book and map business of F. S. Blanchard & Co., of Worcester, Mass., publishers of the Red Book Automobile Guide of New England and the pilot maps. The Red Book will be consolidated with the New England section of the Blue Book and the information heretofore contained in the two volumes, will hereafter be given in one book. Henry MacNair, who prepared the routes and maps for the Red Book, has joined the staff of the Blue Book company and will continue his work in New England. Today the New England road crew, consisting of E. R. Mixer and MacNair, started on the work for the 1910 New England Blue Book. Next week John Mixer and Robert Bruce will start in car No. 2 through New Jersey and the south, and car No. 3, in charge of John P. Dods, will leave Chicago to begin its work on the 1910 middle west book.

ADVENTURES OF REGAL IN WESTERN WILDS

By George D. Wilcox

OGDEN, Utah, July 30—It is a wise provision of nature that we poor mortals may not know what the future holds in store for us, else the gay start of the transcontinental Regal Plugger from Rawlins Sunday morning would immediately have changed to a feeling as of one going forth to slaughter. Nothing short of Rock Springs would satisfy us, and we flew along for the first 20 miles, it looked so easy. Heading westward along the tracks of the Union Pacific road, we found ourselves in a rough, rolling country of steep ascents but fairly good road surfaces, where topping a long, hard climb, we had our first view of our friend, the coyote, whose comrades we see hourly, at work on his native heath. A narrow valley lay before us, divided in the center by a slight rise; on the one side fed undisturbed a beautiful antelope and on the other, not 500 feet away, the coyote stalked him. Crawling closer and closer he came and we, the silent spectators of the impending tragedy, unseen and unheard by either, watch the scene with interest. As the coyote neared the top of the rise his sky line profile offered a too tempting mark to our driver, and with the crack of the rifle the four-footed hunter somesaulted over and over, a 35 special bullet in his ribs. The antelope, electrified into a streak of brown, was gone in an instant.

Road Is Indescribable

Wamsutter, on the eastern edge of the Red Desert, furnishes the noon stop and after filling the water bags we tackled the road across this barren waste, finding a fair trail until we ran into Bitter Creek, when our troubles began. Of all the roads ever devised by man for the purpose of wrecking a motor car this was the limit of limits. The recent great storms had cut an already almost impassable trail into great washouts and gullies, 10, 20, and in some cases, 30 feet deep; the side walls steep declivities down which the car must be lowered with utmost care and the bottoms filled with mud, water and rocks. We became expert engineers with block and tackle, excavators with pick, shovel and bar, bridge-builders without material except such as might be at hand. The Plugger was hoisted and lowered up and down across these horrible pits. The crew labored unceasingly in the torrid sun; the strain was almost unbearable and the real danger of losing the car by miscalculation and consequent drop into the bottomless gulches was great. How we ever got the car through this 100 miles of country we hardly know.

Night found us at Point of Rocks and gray dawn disclosed rain, and how it did come down! Bitter Creek, a sluggish alkali stream, rose to a raging flood with a bound and proceeded to tear into the already soggy banks like a steam shovel at work. One look at the trail was enough. We were marooned between fords and for 48 mortal hours we waited in the old stone stage house, a relic of the Indian days.

Tuesday afternoon we ventured forth and again pointed westward. Five miles out we came to the first washout. The creek was a raging torrent and there were scant prospects of getting the car across. However, we plunged in the water, which rose above the wheels into the body and over the motor and we stopped in mid stream all awash and surveyed the chances for a rescue. The tackle was gotten out and volunteers were called for to go ashore with the dead man and lines. Wading in the ice cold water which almost took one off his feet, three of the crew reached dry land, and for 2 mortal hours we pulled and hauled; finally the car was hauled nearly to dry land, when the tackle parts broke and with a rush the poor plugger dove deeper than ever into the muddy flood. By this time we were plastered with alakli, soaked and were dead tired, and when we saw the object of all our effort slide gracefully back into that creek we sat down as one man and cussed Wyoming roads to our hearts' content. We held a council of war and devised new methods of extraction which, when finally put into execution, was rewarded with success, and the Plugger emerged dripping as a water wagon should.

Series of Climbs and Descents

We stopped at Rock Springs for lunch and on across a high wild mountain plateau into Green river we went, the road a series of steep climbs and dangerous descents. Across the Green river and southwest into a mighty canyon we plunged, determined to make Granger, 45 miles away, for the night stop. The road improved somewhat and we were congratulating ourselves that Granger was only 5 miles distant and that we should arrive by 9 o'clock, when our searchlight revealed the water of the greatest washout of them all, directly across our path. Its walls, 40 feet high, were precipices, its bottom fathomless mud, and progress westward seemed effectually barred. Scouting parties started north and south along its rim for an opening to cross and finally, 2 miles to the south, we discovered the chance—an easy approach and descent to a firm, gravelly bottom, with the shallow water rippling in the moonlight, and a passable prairie on the other bank, which allowed us to regain the road to the north and a bed in Granger.

The Plugger was brought up, rushed the ford—and sank in a sickening manner to the hubs in quicksand just at the moment when a safe passage seemed sure. One look was enough. We all realized that we never could pull the car out alone and in the dark, 5 miles to Granger afoot, in our exhausted condition, seemed impossible, so we decided to camp by the car until daylight and get what sleep we could. In this high altitude the nights are bitter cold and a sage brush fire, unless constantly fed, is a failure; so all night long we alternately froze and roasted as our firemen piled on the brush or failed to return in time with a supply necessary to save the blaze. We were supperless, miserable and disgusted, but all things must come to an end and daylight and the sun warmed our blood enough to begin the work of rescue, which we accomplished in due time, and headed for Granger and food.

Travel Down a Mountain

Here we found that we must follow north along the Oregon Short Line to Opal and Oakley, and thence south through Cumberland to Evanston, a pleasant little detour of 75 miles, to avoid more washouts between Granger and Evanston. Night found us at Opal, and with good food and good beds at Callahan's hotel we were off early for Evanston. The roads improved, the day was beautiful, and we tore off the 30 miles to Cumberland in great shape. We saw grass and trees again and hailed our return to God's country with joy. Out of Cumberland we went, directed by the entire population, and had visions of Evanston, 35 miles away, for lunch. Then miles out a dark suspicion arose in our minds. Could this be the fine road we has been assured of? We were bumping up long steep hills through sage brush and deep ruts, and it looked as if we had gone wrong. Precipitous mountains loomed ahead and to the right and left, and as we talked we come out onto the brow of a lofty cliff overlooking a beautiful valley with a seemingly fine road leading westward. Correct, we argued. There's the fine road, so we commenced the descent of the cliff down the steepest wagon road one could imagine. With every wheel locked, the car slid down the narrow road and we heaved a sigh of relief as it landed safely at the bottom.

For 5 miles up the canyon we fairly flew and sighted a ranch house at last, but as we approached the beautiful road ended in a swamp, and again we were stuck. Careful questioning at the ranch revealed nothing. English was not spoken or understood, but finally to our repeated questionings as to Evanston one of the boys pointed vaguely to the east from whence we came and showed as that to the west we confronted a blind canyon, ending abruptly a few hundred yards away. We experienced a sudden sinking feeling when we thought of that road back over the cliff. No motor car on earth could ascend it—how should we escape from this prison in the mountains into which we had fallen? The odometer showed that we were 16 miles out from Cumberland

and the ride back to the cliff was a silent one. As we approached the climb back to the summit it clearly demonstrated its impossibility, but as we surveyed it our driver, Old Snowball Bill, who has now held the wheel alone for nearly 3,000 miles, discovered a dim trail along its base to the south. We followed this forlorn hope, bumping and thumping fearfully mile after mile, not knowing whence we were going, but hoping, At last a row of nine smokestacks appeared in the dim distance and as we rose over a hill Cumberland lay before us. Four precious hours of daylight gone, 32 miles of seeing Wyoming, and we were back whence we started.

Again we were "instructed," and hitting the right road south made a fast run into Evanston, arriving at 6 p. m., following for miles the snow-clad Unita range. On Friday morning we headed west into Weber canyon for Ogden, 86 miles.

Beauties of the Ride

Who can describe the grandeur of this ride through the great natural gateway that opened before us, permitting our escape to the beautiful valley in which Ogden is nestled? Range on range of magnificent snow-clad mountains piled themselves to the north and south. The Weber river, roaring through the narrow gorge, gave scant foothold for the wagon road which perched now upon one shoulder, again on the opposite of the cliffs, winds under the shadow of the great overhanging rocks. One false movement of the steering wheel, a skid, or failure of the brakes, and—well, it isn't a good thing to speculate on as to the net result. The road is superb—a wonder when such physical difficulties as it overcomes are considered, and at last, filled with the grandeur and majesty of this wonderful pass, we broke through the Devil's gate and came abruptly into the level and beautiful valley. We were received in Ogden with open arms. The boys entertained us until an unholy hour, and I am sure none of the Regal crew ever will forget the bunch of good fellows who so royally wined and dined us, placing at our disposal their cars and time in this beautiful city. Next day we again struck westward into the great desert country.

PRIZES FOR FRANKLIN

Los Angeles, Cal., July 28—In the Santa Monica road race the Chanslor & Lyon trophy for the most consistent performer has been awarded by the judges to the Franklin entry, the Greyhound II, entered and driven by Ralph C. Hamlin, of Los Angeles. Running at the rate of nearly a mile a minute, the Franklin covered the twenty-four laps of the 8.3-mile course with a variation of only 18⅘ seconds in the time of the several laps. The fastest lap was made in 8 minutes 36 seconds and the slowest in 8 minutes 54⅘ seconds. The average was 8 minutes 45 seconds, the variation being only 9 seconds either way. The course was 199.2 miles long.

Plans Are Being Made for Southern Reliability

Atlanta, Ga., July 29—With date set, several routes selected and a committee at work on the rules and regulations the Georgia state endurance runs begin to assume definite shape. A meeting of the executive committee of the Georgia Good Roads Automobile Association was held here today at which the action named above was taken. The date set for the starting of the run was November 8 and on that day cars will start at a half dozen different points on endurance runs to Atlanta. The drawing up of rules and regulations for the conducting of the runs has been left to the contest committee of the Savannah Automobile Club. This body will draw a set of conditions founded on Glidden lines, but strict enough to make a winner possible in a 2-day run. Only three of the routes have been definitely selected. They are:

1—Reliability run from Savannah to Atlanta —Over route to be announced later. Prizes in this contest will be $750 for the first car and $250 for the second.

2—Reliability run from Augusta to Atlanta via Harlem, Thomson, Washington, Lexington, Athens, Winder, Lawrenceville, Stone Mountain, Decatur to Atlanta. A prize of $400 is offered the car making the best score over this run, and $200 for the second best. The Athens Banner offers a special good roads prize of $500 for the counties of the route between Atlanta and Augusta—$300 for the first prize, $200 for the second and $100 is offered in addition for the third, for the county offering the best 10 miles of road over this route, Richmond, Clarke and Fulton counties being excepted.

3—A combination of the two proposed runs from Albany and Fitzgerald—The routes from these two points to meet at Macon and from thence via the counties along the Central railroad to Atlanta. The route from Albany to Macon will be via Leesburg, Americus, Montezuma, Fort Valley and Macon, thence to Atlanta. The route from Fitzgerald will be via Abbeville, Hawkinsville and Perry to Macon, thence to Atlanta. Allowance will be made for the 7 miles' difference of distance between Albany and Atlanta, and Fitzgerald and Atlanta by the committee on contest regulations of the Savannah Automobile Club. A prize of $500 will be offered for the car making the best score and $250 for the car making the second best score in this contest. Also a prize of $250 for the county offering the best 10 miles of road, and $100 for the second best in the routes of this contest, Bibb, Dougherty, Ben Hill and Fulton counties excepted.

Other state contest routes are to be announced later. All cars, from points of starting or elsewhere, in or out of the state, will be permitted to enter these contests at any official starting point, subject to classification and handicap conditions, to be determined by the committee on contest regulations of the Savannah Automobile Club. It is the purpose of the state committee to encourage and permit the greatest freedom of entry and to secure a fair basis of competition by which all cars may enter upon relatively just conditions.

Savannah's End of It

Savannah, Ga., July 31—With very near all the plans complete, November 8 has been set for the Savannah-to-Atlanta endurance run, under the auspices of the Savannah News, Savannah Automobile Club and the Atlanta Constitution. The prize money now in sight above the expenses of the contest will be divided into a first and second prize, $750 for the first car and $250 for the second. The rules governing the contest will be rigid and patterned after those of the Glidden tour, according to preliminary plans discussed at the meeting of the Savannah Automobile Club on Monday night. All counties that expect to share in the division of prize money for good roads must get in their checks by August 10 in order for the Savannah Automobile Club to perfect arrangements. Already several counties have expressed their willingness to contribute to make the contest the biggest event in the motoring history of the south. The contributions that come in probably will swell the amount that will be given to the prize winners. A special committee of which A. W. Solomon is chairman, will meet within a few weeks and formulate rules and regulations for the contest. The average speed for the run will be at least 20 miles an hour, or as high as 30. The distance to Atlanta via roads is estimated at 300 miles. Whether or not the endurance contest will end the day it starts is a question yet to be determined. Cars in the contest must be fully equipped. Supply stations for the cars will be established at convenient points by the Savannah club. Each car will carry an observer and the drivers will decide largely what portions of the route are in the best condition. Upon these opinions will rest the distribution of the good roads prize money, unless other plans are adopted by the club.

Engineers in Chicago

Chicago, Aug. 2—The annual meeting of the Association of Automobile Engineers which is to meet in Chicago this week will be entertained at the Algonqin hill-climb on Thursday. Motor cars for their transportation will be furnished by the trade in Chicago. On Friday morning an electric session will be held at the Illinois Athletic Club, where most of the visiting engineers will reside during their stay in the city. Friday afternoon they will visit the Pullman palace car plant and work up an appetite for the banquet to be given them at the athletic club in the evening. Saturday morning another session will be held at which papers will be discussed. The program for the 3 days is as follows:

Thursday, 5, at 10 a. m., in cars loaned by Chicago dealers to Algonquin, Ill., to witness afternoon half of hill-climbing contest.

Friday, 6, at 9:30, meeting in gymnasium of club. Papers: "Energy Consumption of Commercial Vehicles," Churchward; "Possible Increases of the Weight Efficiency of Storage Batteries," Sokal; "Some Points in the Operation and Care of Vehicle Batteries," Beck; "Electric Cradle Dynamometer," Baldwin. After lunch take 1:20 train from Van Buren street suburban station Illinois Central to Pullman, Ill. The Pullman company has extended an invitation to visit its works.

Saturday, 8:30 a. m.—Leaving in motor cars for South Shore Country Club. Meeting at 9:30 in tap room. Papers: "Notes on Lubricating Oils," Floyd; "Commercial Test of a Pierce Water-Cooled Motor," Luhrman and Woodward; "Test of a 20-horsepower Franklin Air-Cooled Motor," Evans and Lay; "The Wider Dissemination of Professional Knowledge and Experience," Hess. Luncheon to be served at club to members and visitors as guests of the Woods Motor Vehicle Co. Golf and swimming in the afternoon for those desiring to remain.

The Readers' Clearing House

EDITOR'S NOTE—In this department Motor Age answers free of charge questions regarding motor problems, and invites the discussion of pertinent subjects. Correspondence is solicited from subscribers and others. All communications must be properly signed, and should the writer not wish his name to appear, he may use any nom de plume desired.

QUESTION OF BEARING SURFACE

COLUMBIA, TENN.—Editor Motor Age—In order to settle a dispute will Motor Age tell me: Which main bearing in the following three motors, each of standard design and 30-horsepower, 4-inch bore and 4½-inch stroke, will give the longest service, one with the cylinders cast singly with a five-bearing crankshaft, one with twin cylinder castings and with a three-bearing crankshaft, or a motor cast en bloc with a two-bearing crankshaft?—L. C. Buryard.

Your question is difficult to answer. In the first place, there is no standard design in motor construction as yet, nor are there three motors of the types you mention having the same kind of bearings. There are few motors, if any, with four separately-cast cylinders and a five-bearing crankshaft, which are not fitted with plain bearings; whereas, on the other hand, Motor Age knows of no motor with four cylinders cast en bloc whose two-bearing crankshaft does not rest on ball bearings. The life of a bearing depends upon the efficiency of its physical and mechanical construction, its frictional area, its lubrication, and the alignment maintained. In a five-bearing crankshaft proper alignment is more difficult to maintain than in a three or two-bearing crankshaft, and the greater frictional area, while it might tend toward a longer life, at the same time increases the frictional resistance and decreases the power efficiency of the motor. It is also possible to make the frictional area of a three-bearing motor just as great by increasing the length and diameter of the bearing. The greater the load put on a bearing the more frictional area required. Granted that it were possible that the bearings in each case were as rigidly supported, of the same material, and efficiently lubricated, the five-bearing shaft might be the longest lived.

AIR-COOLED TWO-CYLINDERS

Oshkosh, Wis.—Editor Motor Age—The making of air-cooled two-cylinder opposed four-cycle engines is a comparatively modern undertaking, and although there are several manufacturers of this type the writer has, up to the present, failed to see one without some features which to say the least are undesirable. In one of the first the cylinders were cast integral with the crankcase, the cylinders being in exact alignment. This required bent or crooked connecting rods—very unmechanical. For a time this engine performed fairly well. It ran reasonably quiet, but the side wear of pistons and cylinders caused by offset connecting rods soon caused considerable rattle, as well as diminishing the amount of power it developed at first. Yet it is surprising how well it did perform when we take into consideration how theoretically incorrect the construction was. However, this style of engine is still used by several manufacturers of motor cars of the high-wheel hard-tire type. Engines so designed are driving cars all over the country which weigh 1,280 pounds, and up the steepest hills any ordinary car can go. Yet the bore is but 4 inches, with the same stroke. If one desires to regrind the valves of many motors now on the market the construction is of such character that the valve cages, and sometimes part of the crankcase, must be removed to permit of it. There should be plugs screwed in the outer side end of the valve cages or ends of cylinders of sufficiently large diameter to remove the valves, or to regrind them in position. It is not necessary in such cases to lose any of the radiating surface as is usually done where plugs are used. In having these plugs made with cooling fins on their outer ends similar to those on the cylinders one defect may be cured. Again, there is no reason why there cannot be a hand hole in the top of the crankcase almost as large as the diameter of the case. Such forethought assists the person who may use the engine from the fact that inside of the case the crankpins and connecting rods can be easily inspected. It also permits the observer to note the quantity of oil in the crankcase.

The writer was lately in a motor factory where two-cylinder opposed—I dislike the term double opposed—engines were made exclusively, and noted that the camshaft gear was made from a hard brass alloy. This metal had a musical note equal to that of a bell when the engine was speeded up. A cast iron gear would be preferable. Another noteworthy fact was that neither the pistons nor the connecting rods were weighed up to balance. Consequently there was a fearful amount of vibration to the engine, which might have been prevented if all the parts were carefully balanced.

Why will motor manufacturers continue to use cast iron flywheels with four cast blades as spokes They are dangerous. Why is not a solid flywheel with thin sheet metal blades attached to the periphery far better for cooling? They certainly blow the air upon the hottest part of the cylinders instead of on the crankcase as do the cast fan spokes. Then they are safer. The writer has known of a number of instances where cast iron flywheels have bursted, causing much damage and sometimes injury to persons.

While it requires a little more work and is slightly more expensive, yet the result is so much more satisfactory if the intake and exhaust pushrods are operated by different cams. It is usual in opposed cylinder engines to use the same cam to operate both intake and exhaust pushrods, but when this is done a compromise is made in the shape of the cam so that it does not time the opening and closing of either the intake or exhaust valves with the best possible results.

It is a well known fact that the valves and pushrods of an air-cooled engine make more noise than in water cooled engines, and there seems to be no way to entirely prevent it, but it can be partially remedied by the shape of the cams. When the engine runs very rapidly the pushrod drops back too suddenly if the cam is not of shape to prevent it. "Good enough" is hardly the term to qualify the shape of the cams. A little more care should be exercised than is usually taken to the shaping of these cams.—C. B. Hatfield.

SUGGESTION FOR NEXT GLIDDEN

Kansas City, Mo.—Editor Motor Age—No one interested in motoring can help but see the injustice of the Glidden tour to the small cars and how impossible it is for them to compete with Pierce-Arrows and cars of that class. I am most anxious to witness a relibility and endurance contest among the little ones and suggest the following tour for cars selling at $1,000 and under. I am not only familiar with the country through which this tour runs but say without fear of contradiction that there are more cars sold in that territory of the class that would make up this tour than in any other territory in the United States. And I say further that there is no more beautiful country through which to tour and nowhere more perfect weather than is found in this district in October. The dinner stops and the night stations are all in towns of sufficient size to insure excellent accommodations and the distance from night stop to night stop makes a 14 to 15 mile schedule practical. I would have the tour start at Detroit on Monday and lunch at Jackson, with Kalamazoo the first night stop, 140 miles. Tuesday, Kalamazoo to Chicago, 145 miles; lunch at Niles. Wednesday, Chicago to Clinton.

140 miles; lunch at DeKalb. Thursday Clinton to Ottumwa, 145 miles; lunch at Davenport or Moline. Friday, Ottumwa to Des Moines, 140 miles; lunch at Osceola. Saturday, Des Moines to Omaha, 145 miles; lunch at Atlantic. Spend Sunday in Omaha. Monday, Omaha, to Marysville, Kan., 135 miles; lunch at Lincoln. Tuesday, Marysville to Kansas City, 135 miles; lunch at Atchison. Wednesday, Kansas City to Moberly, 135 miles; lunch at Carrolton. Thursday, Moberly to St. Louis, 148 miles; lunch at Montgomery. Friday, St. Louis to Vincennes, 150 miles; lunch at Centralia. Saturday, Vincennes to Indianapolis, 145 miles, lunch at Terre Haute. Spend Sunday at Indianapolis. Monday have the speed trials at the great Indianapolis track. If points are counted for reliability, endurance, fuel consumption, and speed, I predict that such a tour would be more popular than was ever the Glidden.—Fair Play.

BIG WHEELS REQUIRE LESS POWER

Klamath Falls, Ore.—Editor Motor Age—Through the Readers' Clearing House please answer the following question: Will it take more power to drive a motor car with 40-inch wheels than to drive a machine with 30-inch wheels, the speed being constant and the gearing arranged so that the speed of the two engines is constant? It is argued that the 40-inch wheels give less leverage than the shorter wheel.—Hall-Shepherd Co.

It should take less power to drive a motor car with 40-inch wheels than to drive a machine with 30-inch wheels. The advantage of large wheels is that they pass over obstacles in the road more easily than small ones, and as to the larger wheels giving less leverage, that would all depend on the diameter of the driving gear. If the diameter of the bevel gear on the rear axle, in the case of a shaft-drive car, or of the sprockets on the drive wheels, in case of a chain-driven car, were proportional to the size of the wheels the leverage would be the same in either case.

USING GRAPHITE IN OILER

Philadelphia, Pa.—Editor Motor Age—Replying to C. M. Cotton's communication in Motor Age, issue June 3, relative to mixing graphite with oil. I used graphite in my McCord oiler, and it cost me several dollars to learn my mistake, as it clogged the oiler. Since then I have used nothing but the best oil and have had no trouble with lubrication.—W. T. Nields.

POINTS OUT LAW OF GASES

Minneapolis, Minn.—Editor Motor Age—I must take exception to a statement made by Motor Age on page 19 of Motor Age, issue April 15, in answer to a question by Louis Selle, of Great Bend, Kan. According to law of gases, the volume being constant, the pressure varies directly as the absolute temperature and not as Motor Age stated. The correct solution of this problem is as follows:

P=T where P is the original pressure 60 pounds.

P, T, per square inch at 30 degrees Fahrenheit which is equal to 271.89 degrees absolute temperature or T.

$P = \frac{P\,T}{T}$ P, is the resulting pressure at 60 degrees Fahrenheit or 288.55 degrees absolute temperature.

Substituting these values in the equation $P = \frac{60 \times 288.55}{271.89} = 63.68$ pounds per square inch.

This result, as can be seen, is far from 120 pounds per square inch, as Motor Age figured it. The stretching of the inner tube and casing has been neglected in this, but as the pressure varies inversely as the volume the temperature remaining constant, the expansion of the tube and casing would tend to reduce the pressure below 63.58 pounds per square inch.—A. V. Duncanson.

This question was settled on page 18, Motor Age, issue April 29, 1909.

COBE CUP BUICK

Putnam, Conn.—Editor Motor Age—Through the Readers' Clearing House will Motor Age inform me if the 30-horsepower Buick which won the Cobe cup recently was strictly a stock car—that is, the chassis? If not, how did it differ from the regular stock model 17 Buick which sells for $1,750.—A Subscriber.

The fact that this car was pronounced eligible by the technical committee and allowed to enter this race is proof enough that it complied with the stock chassis defintion which applied to this race and which was: "A stock chassis is one which, without any changes whatever, except that lighter rear springs may be used, can, by adding the necessary parts be assembled into a complete stock car for which it is designed. The following changes are permitted: Additions to oil and fuel supplies; changes of steering post angle, and change of driving gear ratio, and tire and rim equipment was left optional with the entrant." Taking advantage of these allowances the Buick car, which won the Cobe trophy, ran without a muffler to reduce back pressure on the motor and weight, no fenders or running boards were carried, and of course every other advantage was taken to reduce weight and still comply with rule ten, which demanded that, "Competing cars in running order, but without water, gasoline, tools, spare tires or parts, must weigh at least 2,250 pounds, this weight including oil in the motor and transmission." A 2 per cent ballast was permitted to bring the car's weight up to this amount. The Cobe trophy car used perforated pistons, which greatly reduced the vibration set up in the motor and allowed of higher motor speeds; the radiator had a brass strap attached to the frame at each end and passing over the radiator frame, with an oval opening for the filling cap, to hold the radiator firmly in place and a new type of dash was used. The Cobe trophy care dash was used. The Cobe trophy cars

BATTERY NOT INJURIOUS

Carlinville, Ill.—Editor Motor Age—I have a Regal car fitted with a Remy magneto. To start the motor I use the battery and then the magneto, which I received from the factory with only three dry cells. Will Motor Age inform me if a 6-volt, 60-ampere-hour storage battery would injure my coil?—F. R. Merz.

No. A single dry cell, when fresh, generally has a voltage of over 2 volts, consequently three cells connected in series, as yours undoubtedly were, would have a voltage of more than 6 volts. If the dry cells did not injure your coil you are perfectly safe in using the 6-volt battery.

STEAM PRESSURE IN PIPES

Toronto, Canada—Editor Motor Age—Through the Readers' Clearing House will Motor Age tell me what is the highest steam pressure a ½-inch wrought iron steam pipe should stand, also what pressure should a ½-inch malleable iron return bend stand?—H. J. C.

The highest steam pressure a ½-inch wrought iron steam pipe should stand is about 17,000 pounds; this is considerable more than could be applied to a pipe of this size. A ½-inch malleable iron return bend should stand about 150 pounds pressure.

SUGGESTED ROUTE FOR THE NEXT GLIDDEN TOUR

FUNCTIONS AND FRAILTIES OF SPARK PLUGS

By Thomas J. Fay

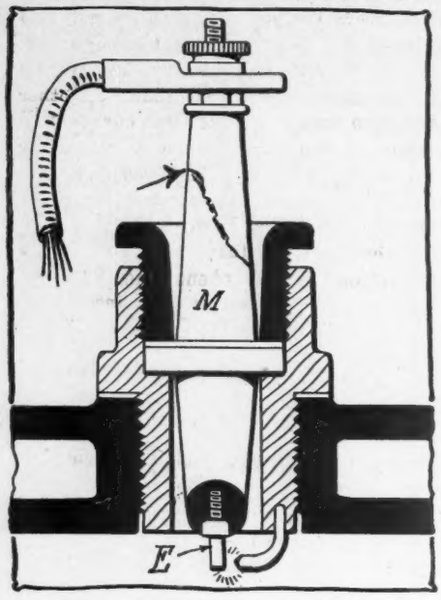


FIG. 1

SINGLE pole spark plugs are almost exclusively used, and the metal of the cylinders serves as the return circuit, so-called ground return—affording two advantages, viz: the spark plug construction is simplified, and the wiring system is relatively free from constructive complications. It is a great advantage to have but little wiring, primarily because the presence of a number of loose wires over the motor interferes with free access and the insulation on the cables, being of rubber, is easily destroyed, especially as the temperature is high in the motor space, and rubber used for purposes of insulation is easily deteriorated in the presence of heat.

Heat Causes Trouble

Since spark plugs are screwed into the walls of cylinders, heat is at the bottom of much of the trouble experienced, and frequently, when the porcelain insulation disrupts, it is because of unequal expansion between parts, rather than to electrical disturbances. If, for illustration, the porcelain surrounds a metallic member, and it expands more than the porcelain, pressure will come on the same, and it may not be capable of withstanding this pressure.

Fig. 1 shows a conventional form of spark plug with mica insulation. In this case the central electrode E is of special nickel steel, of great strength, and means are provided to compress the mica to the maximum. A packing ring should be used between the mica enlargement and the plug proper, for then the pressure will be slightly relieved when the parts heat up, excess strain will be avoided, while at the same time the joint will be tight. Were porcelain substituted for mica in Fig. 2, the absence of the packing ring referred to would result in a leak, and the rigid pressure would cause the porcelain to disrupt, especially when the electrical stresses are added to those due to excess pressure from heat causes; the packing ring P is in place.

In Fig. 3 packing is provided at P under the enlargement of the porcelain, which is shown in section, and the plug, proper, is also provided with packing at P1 to prevent leakage. A packing P2 prevents leakage at the central electrode E. In these respects, Fig. 4 is also adequately provided. Fig. 6 shows the packing P above the enlargement of the porcelain, which is wrong, due to the grinding effect of the packing nut N, when it is tightened, abrading the packing. In many cases the nut is flared off to suit the contour of the porcelain, and cutting through the packing, if it is so placed, is a normal expectation.

Regulating the Spark Gap

In some types of plugs, illustrated in Figs. 4 and 6, a multiple gap G is employed, and the claim is that the spark will take the path of least resistance. If a drop of lubricating oil, which is of higher resistance than the normal path, splashes up, and rests on the terminals, thus interposing a relatively high resistance, the multiple gap is supposed to have one of the paths free from oil, which is on the assumption that the amount of oil delivered by the splash will be less than that required to fill in between the several gaps.

With multiple gaps the jumping potential will be lower than when a single gap is used, because some of the charge will brush across, due to the plurality of leakage nodes, and what is gained in one direction is lost in another. For the highest break-down potential, a single gap, of the greatest possible length, offers advantages. Since the metal of which the electrodes are made is detached at a slow rate by the electrical energy expended in the process, it is claimed that multiple-node spark plugs offer the further advantage of one path for the discharge when all the others are reduced so much that the distance is beyond the working amount; the spark plugs, of the single-node variety, are so made that the distance may be varied at will, with but slight trouble, and since they run for several months without having to be adjusted, this phase of the problem offers but slight food for serious reflection.

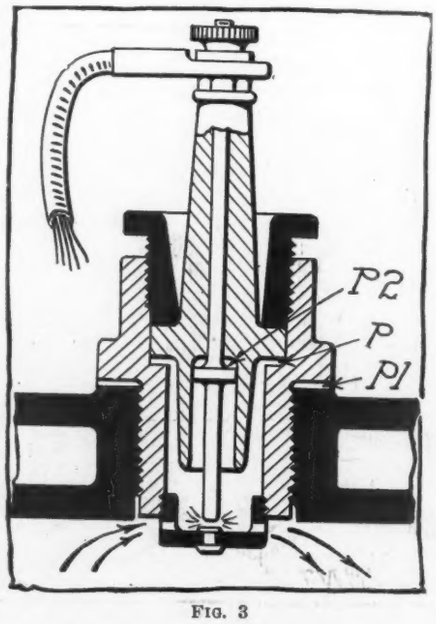


FIG. 3

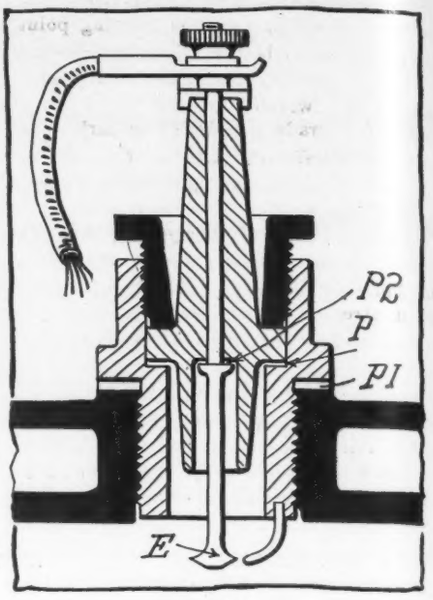


FIG. 2

Wear of the Nodes.

The rate of wear of the nodes, due to the electrical action, which is precisely the same as that in an arc lamp, when the carbon pencils are reduced, will be proportional to the electrical energy expended in the gap, and the material used. If the electrodes are of some material with a high melting point, as platinum, or alloys of iridium and platinum, the rate of wasting away will be very slow, but there is no known material which will be entirely free from loss from this cause.

In practice, owing to the cost of platinum, if it is used in the central electrode at all, the amount is limited to a tip, as indicated in Fig. 3, or an insertion is made, using a wire of small diameter to piece out the central electrode, in the same way that the shell electrode is attached to the shell, or plug. As a general rule the trouble which follows the presence of insertions of alloy platinum, into the central electrode, are more than enough to offset the troubles which follow when the central electrode is of some one material, as special nickel steel, with a very

low carbon content, or other steel in which the carbon is held to a low point.

That the carbon should be low in the steel, is reasoned, since the melting point is lowered as carbon is increased, and the lower the melting point the more rapid will be the wasting process. If iron is used, of a grade in which the carbon is, say five points, the life of the central electrode will be very satisfactory, provided the insulating tube is porcelain, for then the mechanical strength of the part will not have to be so great as when mica is employed. With mica, as before stated, great strength is necessary in order to compress the laminæ, in order that leakage will be stopped. When mica is employed the best material will be nickel steel, with a rather high nickel content and carbon limited to ten points as a maximum. This material will furnish the requisite qualities, as strength, density, and high melting point.

May Use Platinum Alloy

The outside electrode, attached to the plug, may well be of platinum alloy, and the diameter of the wire used, may then be very limited; this is desirable from two points of view, i. e.: the electrode will be easily bent to any desired length of gap, and a needle point will always be fashioned as the material wastes away, which will be at a very slow rate.

In certain classes of magnetos, in order to be able to start without having to use an auxiliary ignition system, the sparking distance is relatively short, and many experiments made, to show what will be the best sparking distance, indicate that, as between 1-3 and 1 millimeter, there is little or no advantage. 1-32 of an inch, which is almost exactly .8 millimeter, seems to be an accepted spark gap, and in this connection, it would seem to be a fair inference that the gap may be varied over considerable ranges without altering its effectiveness.

The tendency to disrupt the porcelain will be accentuated very much if the spark gap is increased, since the potential required to break down the gap increases not only with the compression pressure, but with the length of the gap as well. It is on this account that motorists are sometimes led to believe that the sparking system is in good order, since, when the plug is on the open, a spark is given, but when the plug is inserted into the cylinder, and the compression is made, no results follow; obviously, the thing to do is to reduce the length of the spark gap, so that a spark will propagate in the cylinder, despite compression. Although a good, vigorous spark is desired, even so, the shorter the gap the less will be the chances of destroying insulation, and the longer the life of the spark plug; good timing, for illustration, will do more to make a motor work well than will inferior timing and a spark of great competence.

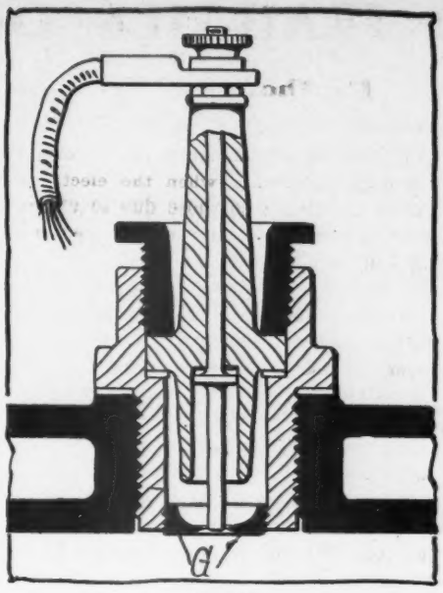


FIG. 4

Dielectric Strength Necessary in Porcelain

In view of the high temperature of the cylinder walls, against which the spark-plug must contact, the insulation of the spark plug must be of porcelain, mica, or some other composition, such as will not deteriorate. But this is not enough, owing to the electro-static stresses set up in the fiber of the porcelain, or other insulation used. If electrical energy will produce a disruptive discharge in an air gap, which is of very high resistance, it will do the same to porcelain or other material, for the same reason. The very fact that the resistance is high, lies at the bottom of the phenomenon, and in fact, were the resistance low, instead of high, the disruptive discharge would not transpire.

It should be well understood that to interpose insulation between the paths of an electrical charge, is to subject the insulation to stresses, just as if the material were struck a blow with a maul, or mechanically subjected to torsional, bending, or shearing moments. The amount of the energy in the electrical charge is represented by formula as follows:

$$W = \frac{E2}{R}$$

When E=electromotive force in volts
W=energy in watts
R=resistance of the dielectric in ohms.

Interpreting the Formula

Glancing at the formula, and interpreting the same, leads to the conclusion that the higher the resistance of the insulation, the greater will be the voltage required to disrupt the same, and the greater will be the damage done when the insulation is pierced. Porcelain, as used in spark plugs, may be of two grades, viz: glazed, offering high surface resistance, and vitrified, throughout the entire section, thus converting the whole section into high-resistance material, rather than the surface only.

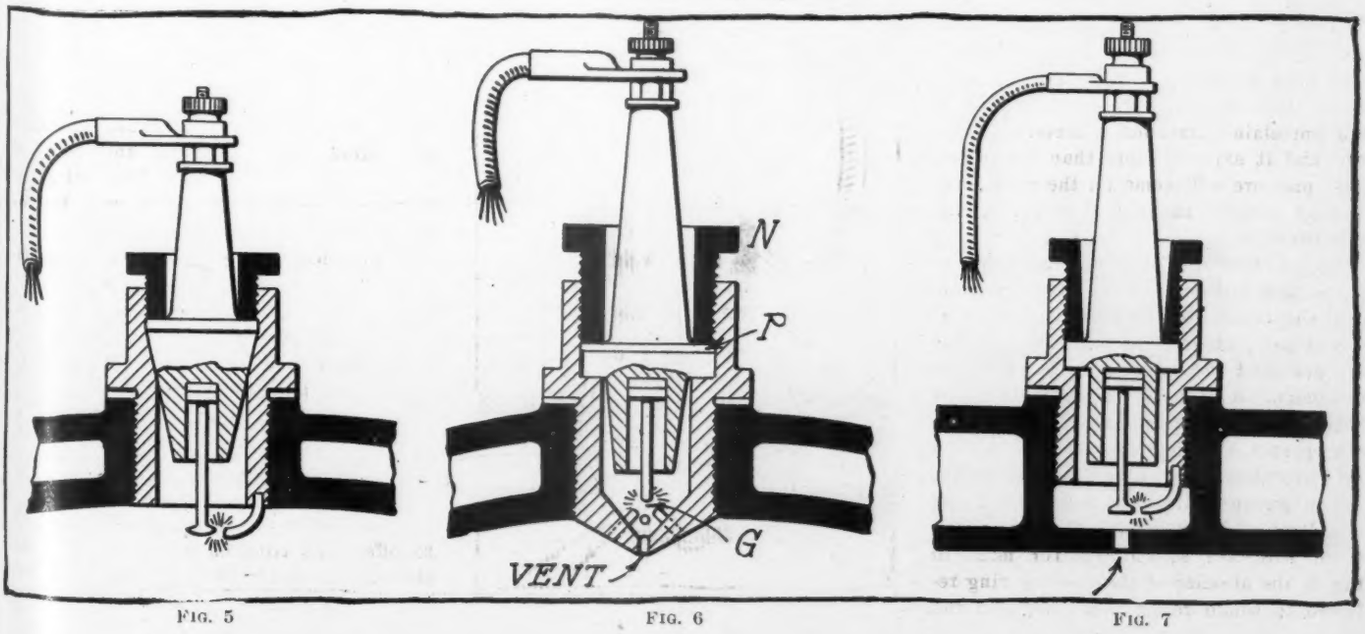


FIG. 5 FIG. 6 FIG. 7

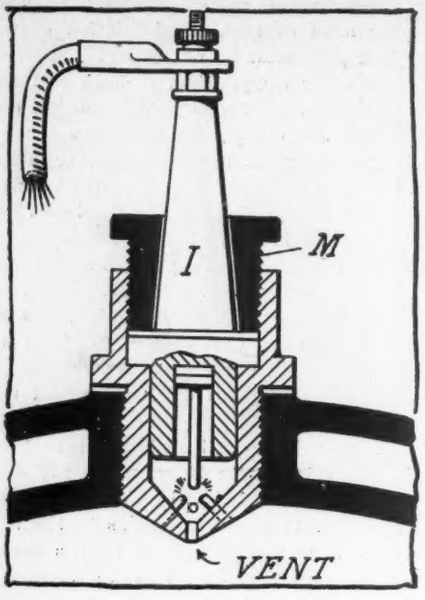


FIG. 8

The high-surface effect is desirable, in any case, in order to assure the highest possible resistance against surface leakage, and incidentally, the greater the surface, the less will be the surface leakage. In this account it is desirable to so design spark plugs so that the porcelain will have an air-gap all around it, at all points excepting at the enlargement, which is for the purpose of holding the porcelain in place, against internal pressure, due to the compressed, and expanded mixture. Fig. 8 shows a defective form of construction, in which it will be observed that the insulation I is in contact with the metal M at all points. Soot, which is the bane of spark plug performance, will quickly form between the surfaces if the space between the insulation and the metal is restricted, so that it is not enough to merely provide a gap such as might assure immunity from surface leakage; the space must be adequate to defeat the tendency of carbon to bridge across.

Question of Porcelain Quality

When the space is adequate to defeat the ills of carbon bridges, as shown in Fig. 2, for instance, the main question resolves into one of the quality of the porcelain, and as the surface of vitrified porcelain is quite as effective as when the material is glazed, there is no disadvantage in having the same vitrified. Dampness, if it penetrates the pores of the porcelain, will lower the resistance of the same, and the arcing voltage will be lowered. Once an arc is started, there is slight chance of success, since the damage which will follow, during the arcing process, may be sufficient to disrupt the porcelain.

Sometimes the porcelain is rendered defective, during the arcing process, in extent so slightly as not to be noticeable to the eye unaided by a magnifying glass, and motorists are then prone to assume that the insulation is perfect, hence the trouble is sought for in other directions, which may be futile. When ignition trouble, of the mysterious sort, creeps in, it is always well to be suspicious of the insulation in the spark plug, even though there are no surface indications, and the proof of sound insulation will be at hand when several new spark plugs fail to remedy the ignition trouble.

Mica Has Advantages

There are hundreds of grades of mica, many of which are of little or no value in ignition work. Shellac, used in the process is in the same category, in that much of it is so impure that its use indicates failure from the start. What is wanted for spark plug work, is a fine grade of mica, as Indian amber, mica, of good selections, in even laminæ, built up and cemented together by using shellac of the first quality, thin enough so not to induce a thick film over the surfaces of the mica laminæ. The amount of pressure employed, should be enough to squeeze out nearly all of the shellac, and the only way this can be accomplished is to employ the needed facilities in the process of manufacture, besides using a central electrode of good diameter and of alloy steel, in order that the clamping process will be effective, and the steel will not stretch, or better yet, part, during assembly, or after, the spark plug is delivered to the user.

Select a Cool Location

Since porcelain and even mica will be damaged if expansion is carried to some length, it follows that a cool location is the most productive of results, and it happens to be true as well, that sooting is less likely to follow if the spark plugs are located in cylinders on the intake side, probably due to the better explosive character of the mixture at that point, and again due to the less likelihood of coke formations in cooler zones. The water-jacket should be extended around the spark plug with even greater care than around valves, and on the whole, the cooler the location, the better will be the performance of the spark plugs.

The length of the spark plug should not be so great that it extends far into the cylinders, for then the extension will be out of the influence of the jacket cooling medium to increase in temperature enough

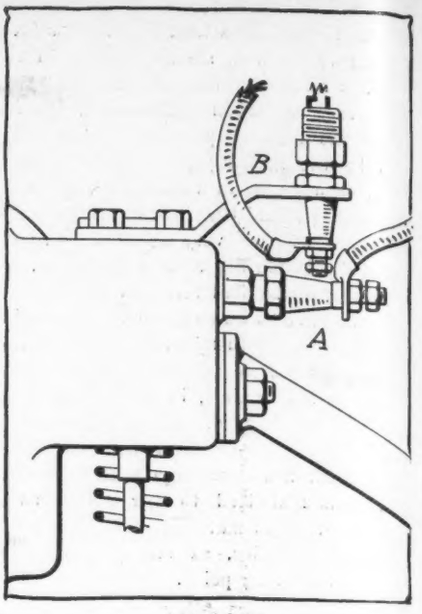


FIG. 9

to damage the insulation even if pre-ignition is not a normal expectation. Pre-ignition depends largely upon the compression, and although some motors might be so constructed that pre-ignition will not be eminent if the extended spark plug does raise to a higher temperature than the surrounding wall, this trouble would be quite possible in the remaining cases.

Leakage, even though slight, destroys the good performance of motors, and in many cases, in actual practice, lazy performance is due to leakage of gas around the spark plugs. When spark plugs are delivered from the makers they are fairly tight, but when heat effects are introduced it is necessary to tighten up, under heat, until the leakage, which may be located by squirting oil over the surfaces, is eliminated. Spark plugs are frail, and when the tightening process is on, it will spell failure to do the work carelessly, or to exert great pressure. The extent to which damage will follow if the spark plug is subjected to excess pressure will depend upon whether or not a soft packing is placed under the clamping nut, as well as at the enlargement, near the other extremity.

In manufacturing, it is necessary to con-

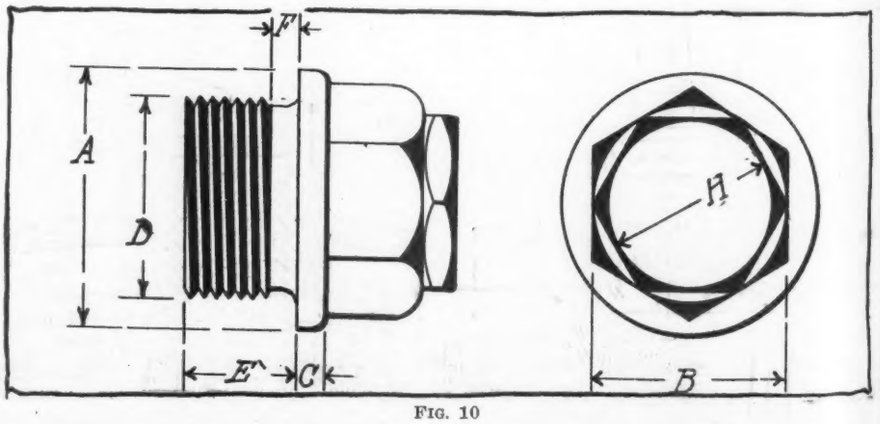


FIG. 10

sider that the porcelain does not come in precisely regular shape in every unit. The result is that limits of tolerance must be adequate to allow for these variations, and the clamping nut, at the top—see Fig. 2—must be a loose fit, radially if it extends down, and around the porcelain. Then—in packing the spark plugs for shipment—if the electrode is weak, since the plugs stand on ends, the electrodes will be damaged before they reach the user in a certain percentage of cases at any rate. If the electrode in the shell is short, and pointed directly in towards the central electrode, it will not be adjustable, since, when the end is eroded away, it may not then be bent to reduce the length of the sparking gap. To obviate this difficulty the electrode in the shell is always somewhat longer than prime necessity demands, and it is slanted towards the central electrode in order to facilitate adjustment of the spark-gap distance. The central electrode is made longer than the electrical requirement, in order that it will protect the smaller electrode, during shipment.

Terminals Should Be Secure

The high-tension leads from the magneto or coil, as the case may be, should be in suitable boxes, or conduits, and where they terminate at the spark plugs, it is of the greatest importance to provide good and secure terminal connectors, preferably of the class which may be readily detached. At all events, the electrical contact should be good, despite dirt, oil and vibrations. Since it is frequently necessary to remove spark plugs from cylinders to examine, test, and clean them, every facility should be offered to render the process free from trouble, and Fig. 9 illustrates a holder for the spark plugs, which will be found handy when it is desired to test them. In this case, the position A is when a plug is in place in the cylinder, and B represents the plug, in the test holder, which is made of flat steel, so contrived that a slot in the extension bracket accommodates the spark plug, during test, and grounds the shell to complete the circuit.

Standard Sizes of Spark Plugs

It is to be hoped that the time will arrive when all spark plugs will be alike as respects the thread which is cut on the plug to enable the same to be screwed into the cylinder. At the present time there are four so-called standards, as follows: The A. L. A. M. standard, using a parallel thread, which enables the plug to be screwed up against a packing ring until it is gas tight; this idea is the superior one to consider; the metric standard, as used on foreign makes of cars, the pipe-tap standard, using a ½-inch pipe tap, the advantages of which are that the more the plug is screwed up, the tighter it will be, and if the fit is good, packing does not have to be used.

The A. L. A. M. standard spark plug is illustrated in Fig. 10 and the reference letters therein used are explained as follows: A is the flange diameter, which is 1⅛ inches; B is the diameter across the flat of the hexagon which is ⅞ inches; C represents the thickness of the flange, which is ⅛ inch; D is the outside diameter of the thread, which is ⅞ inch; E represents the depth under the flange, which is ½ inch minimum, and longer in cases requiring it; F is a recess, not more than ⅛ inch in the axle plane, and to the depth of the thread; and H represents the diameter across the flat of the hexagon head of the packing gland. Other internal details must correspond to the scheme of design, in view of the aims, which is a matter for the maker to decide upon.

The plugs, to accord with this standard, are made from round stock, 1⅛ inches in diameter, and free cutting mild steel, such as will accord with the requirements of automatic machine tools, will serve very well. The metric thread is 16 millimeters. The ½-inch pipe thread is standard of the market for tapered threads. To some extent a 14-pitch parallel thread has been used, and in such cases the diameter is 27-32 inch.

This week the Automobile Blue Book Publishing Co., Chicago and New York, brings out volume four of the Blue Book series, covering the middle west. Its routes begin at Buffalo, Niagara Falls, Erie, Pittsburg and Wheeling, and extend in a general way to the Mississippi and Missouri rivers. This is the largest and most important route compilation ever attempted west of Buffalo and Pittsburg; the through lines of this volume contain 20,800 miles of routes, nearly all covered in the spring and early summer by the Blue Book cars. For every mile of their travel odometer measurements have been taken, and other data sufficient to enable the locally unacquainted tourist to travel the entire territory without trouble. It is now possible for the owner of the Blue Books to leave almost any point in New England, New York state, Pennsylvania or New Jersey, and travel to Cleveland, Columbus, Cincinnati, Louisville, Indianapolis, Chicago, Detroit, Grand Rapids, South Bend, Madison, Wis., Peoria, Galesburg, Davenport, Clinton, Cedar Rapids, Omaha or St. Louis, with facility. To assist the tourist 124 route maps and seventy-nine city maps illustrate the 174 different routes. For the first time a general map has been made, giving in their proper geographical relation the main-traveled routes of Ohio, Indiana, Michigan, Illinois and portions of Kentucky, Wisconsin and Iowa. By means of numbers placed on the routes it is possible for the user to find almost any route desired with a minimum of inconvenience, and initial and terminal points are cared for by an index.

The Automobile Blue Book Publishing Co. has opened permanent headquarters at 1200 Michigan avenue, Chicago, where the full series of books are kept permanently on file. They can also be had of the leading hotels, garages and booksellers in the principal cities, or from the publishers, 239 West Thirty-ninth street, New York City.

MOTOR CAR LITERATURE

The White route book No. 8 has just been received from the White Co., of Cleveland, O., and contains two routes—New York to Richmond, and Atlanta to Staunton. A map and a score or more of half-tone reproductions of picturesque scenes taken on the trip supplement the touring information. The cover page is a view of a toll-gate near Wilmington, Del.

The Lexington Motor Car Co., Lexington, Ky., a new concern in the motor car industry, in its first catalog describes and illustrates in a conventional manner its 1910 Lexington car.

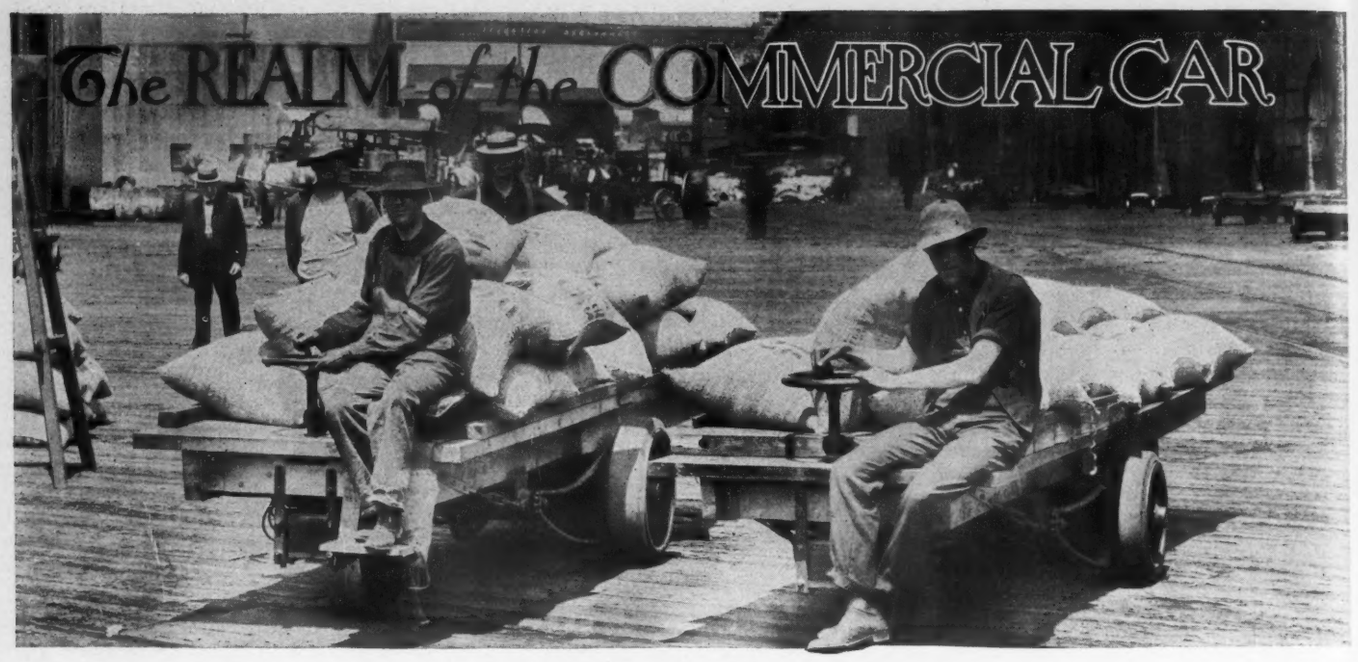
"Motor Faces," a clever and amusing hanger from the Diamond Rubber Co., Akron, O., is a series of faces portraying the facial contortions expressive of the emotions of an earnest motorist.

"Logic" is a neat 14-page booklet from the Bartholomew Co., Peoria, Ill., setting forth in a convincing manner the whys and wherefores of the Glide cars.

The year-book of the motor clubs of the German empire is a fat little volume of 606 pages containing information for those planning a tour of the Fatherland. The many chapters include practical hints for the tourist, first aid for disabled cars, general road laws and regulations, tolls and customs, road signs, shipping facilities from Denmark to Sweden, information in regard to the necessary transportation papers, passports, etc., list of hotels and clubs throughout the empire, also repair, tire, benzine and oil stations. Another feature is the large chart giving the distances in kilometers between the different cities of Germany, together with a road map of Germany and adjoining countries. The entire book is written in the language of the Fatherland.

The Stein Double Cushion Tire Co., Akron, O., has mailed "13 Reasons," a leaflet of yellow hue, drawing attention to its tires.

The Firestone Tire and Rubber Co. is sending out to the trade blue prints, circulars and other descriptive matter on the demountable rim. As an echo of the New York-Seattle race, the Firestone company is distributing booklets reproducing in fac simile form telegrams received from the Acme and Ford drivers enroute, showing the service given by Firestone tires. Attention is called to the fact that three out of four cars finished with Firestone tires and each car was still running on two of its original tires.



TWO-TON ELECTRIC DOCK TRUCKS USED IN BROOKLYN SERVICE

ONE Tuesday last year the president of one of the New York dock companies wrote to a manufacturer of electric trucks and delivery wagons for quotations on two 2-ton trucks. Evidently scenting something out of the ordinary, the president of the truck company answered the letter in person, and was told that the trucks were wanted for hauling coffee and sugar in sacks from steamships to various parts of the warehouses on the company's docks in Brooklyn. A plain running gear with just a flat platform was wanted, but when the price at which these could be furnished was given, the president of the dock company said: "Unless you can get away below those figures, we cannot do business for it will be cheaper for us to continue our present system. All we want is some self-propelled trucks that will handle these sacks quickly and cheaply, and we would not be warranted in investing $6,000 or $7,000 in a couple just for use on the docks."

Immediately the truck builder saw that he was confronted by a new problem. "Do you need a regular truck of the standard type, or will some simpler form of vehicle serve the purpose?" he asked. He was assured that it was not necessary that the truck should follow the conventional design of vehicles intended to be operated in the streets, and the exact service that it would be called on to give was carefully explained. Being a man of quick perception, the truck builder at once saw that if something especially adapted for this work could be evolved to be sold at a low price there should be a large field for its sale for use on steamship docks, at railroad freight and baggage depots, and in large industrial plants for conveying materials and parts from one part of a factory to another and between different shops of the price, and returned to his factory. On Wednesday he remained at home and instructed the factory that he was not to be disturbed. On Thursday he reappeared at the shop and brought with him the completed designs for the special dock truck here illustrated.

The truck maker was the Lansden company, of Newark, N. J.

The new dock truck, as it is called, is rated at 2 tons capacity, but is quite capable of handling 100 per cent overload. It is strongly built, and in fact, it would be practically impossible to load it so heavily with ordinary merchandise as to cause breakage. At a trial of one in the Delaware, Lackawanna & Western railroad terminal in Hoboken recently, the truck was piled high with forty full trunks and moved away with them with ease and dispatch.

The platform, which is wholly free from obstruction and stands 28 inches above the floor, has a length of 14½ feet and is 4 feet wide. The steering wheel and controller are instantly removable and can be inserted at the opposite end when it is desired to drive the truck in reverse direction without turning it around, as frequently happens in warehouses and factories where aisles are narrow. Complete same plant, taking the place of the industrial railway, with its expensive tracks and fixed routes. So he asked for time to prepare a special design and submit a as shown, with battery, the truck weighs 2,750 pounds. Edison nickel-steel batteries are used and on one charge the truck can be run 18 miles, at a maximum speed of 4½ miles an hour. In all ordinary use one charge would suffice for an 8-hour working day, as the truck is standing more than half the time for loading and discharging.

The truck is of the three-point support type, although it runs on four wheels. The sills, which are of wood, 8 by 2 inches, are hinged at the center of the platform on a steel tube passing through from side to side directly above the axle connecting the two drivewheels. This enables the truck to accommodate itself to all inequalities in the surface over which it runs, each half having but three points of support, as illustrated in the photograph showing the drive wheels resting on two 4 by 4 timbers. The break in the platform surface is covered by a steel plate to prevent the pinching of bags.

Only the pair of wheels in the center are drivers. They are fitted with 24 by 6-inch solid rubber tires, and have a tread or gauge of 52 inches. They are of cast

TABLE OF COSTS OF OPERATION AND MAINTENANCE OF ELECTRICS

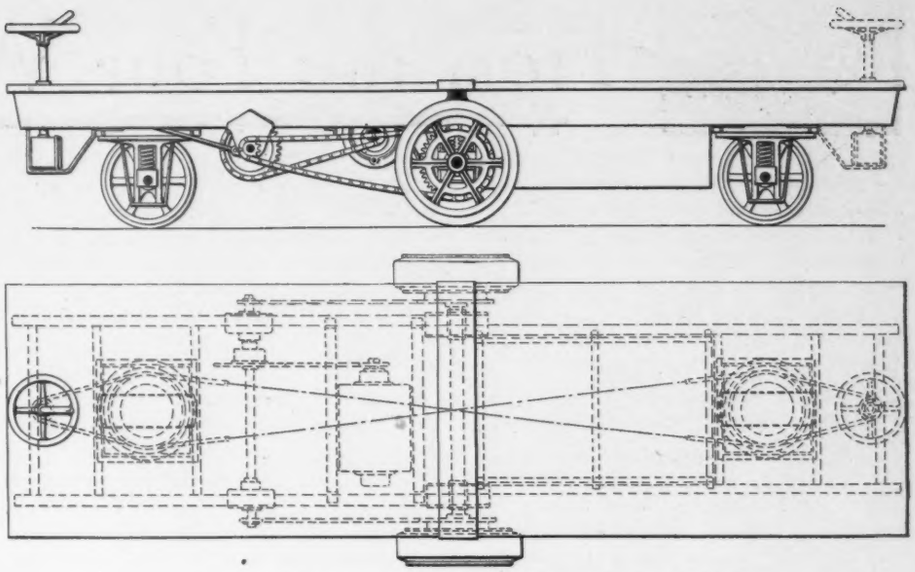
Capacity 2 tons. Current cost taken on a basis of 6 cents per kilowatt hour

Miles operated per year	Average miles per day	Kilowatts of current	COST PER YEAR					Total Cost per year	Cost per Mile
			Rubber Tires	Edison Storage Battery	Supplies for Truck	Repairs and Painting	Current at 6c. per KW hour		
3600	12	8	$54.00	$72.00	$36.00	$40.00	$144.00	$346.00	$.096
5400	18	12	81.00	108.00	56.00	50.00	216.00	511.00	.095
7200	24	16	108.00	144.00	72.00	60.00	288.00	672.00	.093

steel. Both the front and rear wheels are used in steering. They are cross connected underneath the platform by chains and cables so that they turn simultaneously in opposite directions and to the same degree, thus enabling the truck to turn very short. The steering wheels are also of cast steel and have smooth, flat steel tires, 6 inches broad. Axles of all wheels are held in and guided by pedestals, suitably trussed, and the weight on them is supported by stout helical springs, as in railroad practice. The steering wheel pedestals, however, are arranged on turntables so that the wheels and pedestals can turn together, as the wheels and front axle of a dray turn on the fifth wheel. Platform and sills are of heavy oak, finished with oil in the natural wood. Paint and varnish would be out of keeping with the purposes of such a vehicle.

A single General Electric motor is suspended from two cross members in such a way that it can be moved sidewise to secure alignment of the drive chain and forward and backward for drive chain adjustment. From a sprocket on the end of the armature shaft a roller chain drives to a jackshaft forward of the motor which is suitably journaled in brackets bolted to the platform sills. The jackshaft is provided with a differential gear and sleeve to compensate for different rotative speeds of the two drive wheels in turning. Final drive is by side chains from sprockets on the countershaft ends to large sprockets on the drive wheels. All chains are of uniform size and make. By the use of sprockets of different sizes a double reduction in speed between the motor and wheels is obtained, as seen in the side elevation drawing. Distance rods reaching to the ends of the countershaft and provided with turnbuckles are used for making proper chain adjustments to take up slack due to stretching and wear, by moving the jackshaft forward or back a short distance.

A small controller is carried in an iron cradle under either end of the platform, with a socket in the planking above to receive the steering wheel, which is removable. A controller handle is inserted through the steering column and is removable with or independently of the steering wheel. The truck runs with equal speed and facility in either direction.



PLAN AND ELEVATIONS OF LANSDEN ELECTRIC DOCK TRUCKS

From tests that have been made with the dock trucks and long experience with electric street trucks, the following table of operating and maintenance costs has been compiled:

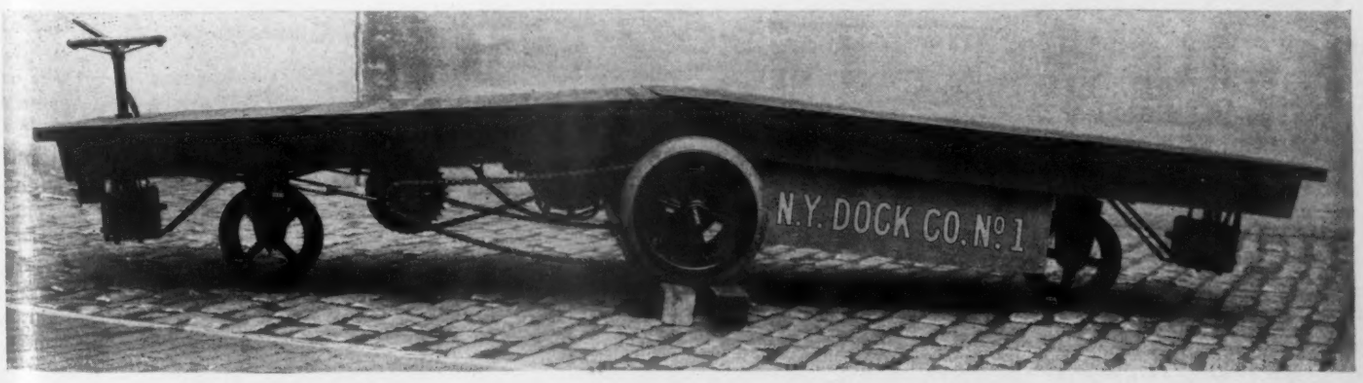
The operating costs would, of course, be practically the same on a ton-mile basis regardless of the nature of the material hauled or whether the truck were run on a dock or in a factory. The figures given would apply in any service where such a truck would naturally be used.

A number of concerns are now negotiating for duplicates of these dock trucks for use inside their industrial plants. An order was passed through on April 20 by the D., L. & W. railroad for one of them for use as a baggage truck at its new passenger terminal in Hoboken, and at that time the company had under consideration the placing of another order for three more within the suceeding week or two, to be delivered in time for use during the summer rush of travelers to the seashore and country. One company has asked for the construction of a truck embodying just one-half the vehicle shown in the design, so that it can carry materials from the upper floors of one building, down an elevator and up on the 10-foot elevator in another building. The truck would have only three wheels, and the battery and motor would be suspended together from the frame under the platform.

Trucks of this type are obviously ideally suited for the easy handling of heavy materials, castings and forgings in machinery shops, foundries, forging plants, and, in fact, in factories of many kinds in which stock and finished products have to be moved from one part to another of the plant to undergo successive operations. The vehicles do not require the laying of tracks, which is expensive and objectionable; are noiseless in operation; have large capacity and ample strength, and, as shown by the foregoing table, can be used at a total cost for current, battery upkeep, tire expense, painting and repairs of less than 10 cents a mile, or say, 5 cents per ton-mile when the truck is loaded only to its rated capacity.

ARE BUSINESS-GETTERS

A laundryman has fitted an old one-cylinder Knox with a closed delivery wagon body and it is giving a good account of itself. A sewing machine house delivers its ware with a one-cylinder Pope-Hartford and it is on the job 6 days a week. Another individual goes about sharpening knives and things in an air-cooled Corbin.



LANSDEN DOCK TRUCK WITH ARTICULATED PLATFORM AND THREE-POINT SUPPORT

From the Four Winds

N S E W

John Chinaman Modern—Honesdale, Pa., has a Chinese motorist. His name is Lee Fie, and he is the presiding genius of a cleanery in that town. Lee's car is a second-hand runabout, and he has secured the inside track of other celestial launderers in Honesdale in that he calls for and delivers work in his car.

Norristown Entertains—The Norristown Automobile Club, of Norristown, Pa., on Friday last gave nearly 400 little ones of that community a day's outing at Willow Grove park. Sixty-two cars transported the little ones to and from the park, where they enjoyed 3 hours' free use of the various attractions, followed by a bountiful luncheon, returning home early in the evening.

Will Visit Exposition—Several hundred motorists will make the trip from Portland to the A-Y-P exposition at Seattle to celebrate Portland day at the fair on August 17. The cars will form a caravan at Portland and will start together for Seattle in a grand parade. The roads from Portland to Seattle are excellent for most of the distance. A reception will be tendered the visitors by the Seattle Automobile Club.

New Territory Opened—Within a few months it will be possible to take a motor trip in Michigan from Keweenaw point to Calumet to Houghton to Ontonagon to Ironwood to Ashland, Wis. From there it will be possible to continue on to Duluth and ultimately probably to Minneapolis. Active work has been begun in Ontonagon county and plans are being made to follow up the work in Houghton county. In Keweenaw county some of the finest roads in the state are being built. In Gogebic county there is a county road system that is second to none, and from Ironwood to Ashland, Wis., the highways are excellent. In Ontonagon county alone a tax of $20,000 has been levied for road building. While the route proposed will open up a new country to the upper peninsula it will also open up the upper peninsula of Michigan to the motoring world. Although a great deal of the peninsula is sparsely settled the country is wild and the scenery is excellent. It offers a valuable field for the tourist.

Denverites Plan a Tour—A motor tour from Denver to Cheyenne, Wyo., is being planned for the races to be held August 17 under the management of the Cheyenne Motor Club. There will be six or seven Denver cars entered in the 200-mile race, and the interest in Denver is as great as it is in Cheyenne. Practically all the contestants in the recent road race over the Brighton course will be in the Cheyenne race.

Is a Thriving Club—The Automobile Club of Delaware County, Pa., is one of the most thriving suburban organizations in the country. Last month's membership report showed 357 names on the roll. Besides its work in helping the townships to build and repair roads, the club has just established a touring information bureau. A clubhouse is being discussed and at the last meeting President Weeks appointed a committee to decide on plans and select a site.

Fairs Helping Good Roads—The Ohio Good Roads Association has started the work of having county fairs devote at least 1 day to the education of the people on the question of good roads. It has also selected Tuesday, August 31, as the good roads day at the Ohio state fair to be held in Columbus. The arrangements for the special days at the various county fairs and at the state fair are under the charge of M. M. Maxwell, secretary of the association. It is proposed to have a parade at the Ohio state fair to include all road-making machinery and to contain the advocates of good roads. The association also will build a stretch of good roads to illustrate to the people the manner in which the latest improved roads are made.

Another Quaker Event—Philadelphia will be the scene of a combination race meet and gymkhana on Saturday, August 14. The affair will be held at Point Breeze track. The piece de resistance of the eight-number program will be a 50-mile marathon open to stock chassis listed at $3,001 or over. Other speed events will be 5 and 10-mile free-for-all handicaps and a 5-mile race for small cars. The gymkhana end will include a mile legal-speed-limit contest, a potato race and a polo match.

Saving the Roads—The continued long drouth has not helped the roads of the state of Connecticut any and has rendered them very dusty. Some places through the country the highways are 6 inches deep with dust. The town of Bristol in an endeavor to save the roads as much as possible, has ordered the highways sprinkled every evening during the dry spell and until rain does come. This is rather an expensive process, but it is cheaper than to let them go to pieces under constant travel.

Milwaukee's Orphans' Plans—The annual orphans' outing given by the Milwaukee Automobile Club, on August 19, will be the biggest ever held there, as the club has extended a general invitation to owners who are not members to assist. Inmates of all orphan asylums, instead of only the largest homes, and a number of other unfortunates will be gathered together. Following a tour of the city park system, a big picnic dinner will be served at Washington park. Joseph Farber, chairman of the orphans' outing committee, expects to entertain at least 450 waifs. Private owners of Milwaukee are planning to establish an annual poor children's day on the lines of the orphans' outings.

Sociability Run Booked—The touring committee of the Milwaukee Automobile Club has arranged a sociability run to Lake Geneva, Wis., on Saturday and Sunday, August 7 and 8. This will be the first club event of the season, and it is expected that forty to fifty parties will make the trip. The start will be made at 3 o'clock Saturday afternoon from the public library, Grand avenue and Eighth street. A confetti car will act as pacemaker, establishing a speed not to average more than 17 miles an hour. Supper will be taken at Burlington, Wis., and the run to Lake Geneva, 47 miles from Milwaukee, will be completed before dark. Sunday morning there will be a 3-hour trip around Lake Geneva on the newspaper boat serv-

De Heymel in Stoddard-Dayton, Who Defeated Strang in Match at Waco, Tex.

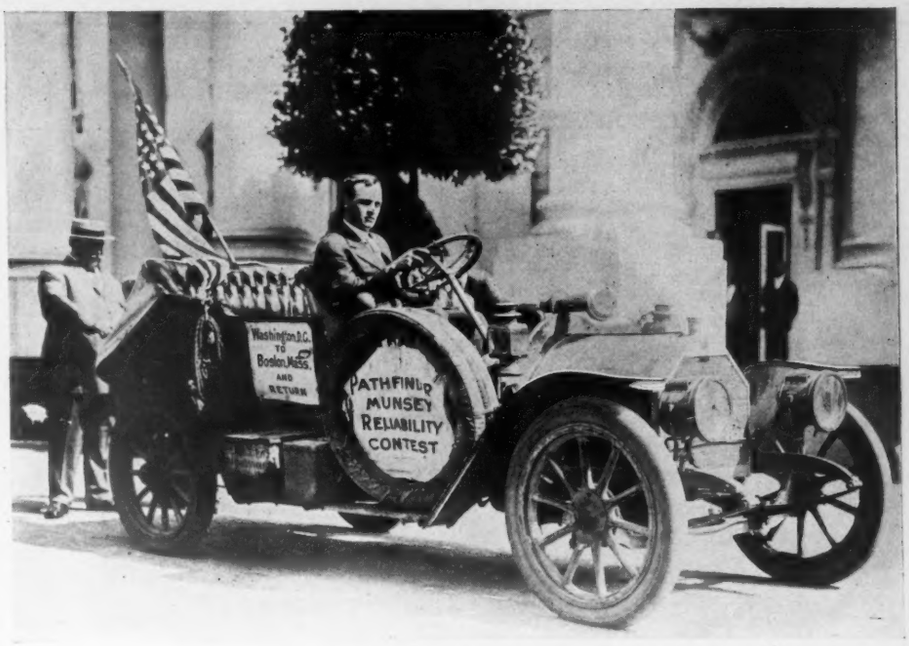
ing the summer residents. After dinner on Sunday the party will take another route to Milwaukee.

Peru Has a Club—The Miami County Automobile Club, of Peru, Ind., has been organized according to the laws of the state of Indiana, with E. Mack Morris as president. The club had charge of the proceedings in connection with the celebration in honor of the extension of the business of the Model Automobile Co., of Peru, when it broke ground for additional buildings covering a total of 550 feet in length. The club also will take charge of the parade which will be held August 12, during the home-coming week, which will be attended by 50,000 people.

Unique Drive Through Sewer—Sixteen large motor cars were used for a unique purpose on July 29, when Governor Crothers, Mayor Mahool, members of the city council and several expert engineers and other city officials were taken for an inspection tour through the city's new mammoth outfall sewer. The officials were guided through the gigantic tube by the lights from several gigantic searchlights. For 6 miles the chug of the motor cars reverberated back from cylindrical walls, this being the extent of the sewer. Governor Crothers and Mayor Mahool headed the motor car procession through the tube in a 50-horsepower Winton.

Another Motoring Artery—The Nechaco valley in British Columbia is soon to be connected with the outside world by a motor road. The Nechaco valley run will be the farthest north for motorists, without shipping their machines to Alaska or northern Europe. In making the trip it will be necessary to ship the cars to Ashcroft, on the Canadian Pacific railway, and from there the machines will follow the old Cariboo trail for 200 miles northward to Quesnelle. From Quesnelle the road is now completed 95 miles further to Bobtail lake, and from there the government is opening it a short distance beyond into the Nechaco plains, which work is now nearing completion.

Oil Treatment For Roads—Oil treatment for roads in Baltimore county, Md., adjoining Baltimore, has been used with such success that the scheme for the prevention of dust and the preservation of the roadbeds throughout the state has been advocated and will likely be put into operation before long. The application of asphaltum, a heavy oil, on different sections, notably the main roadway in Roland park, has proved a great success. The road has become smooth and hard and all the dust has disappeared. On Park Heights avenue oil has been used as a binder in constructing the road. Additional traffic on roads in and near Baltimore has shown that unless some application of oil is made in a short time the surface of the roads are cut up and constant repairs have to be made. A petition will shortly be presented to the Baltimore county commissioners recommending the use of oil on much- traversed roads and it is expected that a satisfactory arrangement will be made.



MUNSEY TOUR PATHFINDER AND PRESIDENT TAFT

Spangler Resigns—Robert W. Spangler, who has been manager of the Denver Motor Club practically since its organization, has resigned from that office, and also from the office of secretary, which he filled after the resignation of Frank England. Gordon L. Wands has been appointed secretary and manager of the club.

More Signboard Work—It is the intention of the Portland and Seattle clubs to arrange for the placing of guide boards on the road between Seattle, Wash., and the City of Roses, and the method of dividing the burden of work is a novel one. The location of the guideposts will be indicated by certain numbers on a chart of the route, and corresponding numbers will be placed in a box before the cars start for Seattle. Each entrant in the run will draw a number from the box, and it will fall to his lot to erect the post indicated by the number he may draw.

Richfield Springs Entries—Additional entries made this week in the Richfield Springs, N. Y., hill-climb, originally scheduled for July 31 and postponed until Saturday, August 7, seem to indicate that the first slope-ascending contest to be held at this resort will be quite a success. A third Knox, a Fiat, Oakland, Mercedes and a Simplex have been entered in the various events and a number of local amateur entries will make things interesting. Arrangements have been made for the entertainment for visitors who attend the climb, a short novel touring contest having been planned for the morning of the 7th. This will be a run around the lake a couple of times, a distance of 25 miles, and contestants are to run under sealed time conditions. Drivers will have to guess at the time schedule and the best guesser will win the prize. Clubs in nearby cites, including Syracuse, Schenectady, Utica and Albany have accepted invitations to make club runs to Richfield Springs and a number of their members will enter both contests.

Entries at Indianapolis—There have been thirty-two cars entered for the first events of the Indianapolis motor speedway, to be held August 19, 20, 21. Among others these include six Nationals, three Chalmers-Detroits and ten Stoddard-Daytons. It is expected at least seventy-five cars will be entered.

Tacoma Club at Work—The motor drives in Pierce county in the vicinity of Tacoma, Wash., will soon be labeled with signboards. The newly-organized Tacoma Automobile Club, the Pierce county commissioners and the metropolitan park board have united in putting up the much-needed signboards. The club has ordered 150 signs. Forty more will be placed along the road leading to Mount Tacoma. The signs furnished by the Tacoma club will be placed on the Mount Tacoma road every 2 miles right into the national park.

Premier Promoting a Run—The Motor Co., Philadelphia agent for the Premier, is laying plans for a roadability run from the Quaker City to Cape May, open only to owners of Premier cars. The start will be made shortly after noon on Saturday, September 11, and on arriving at the shore the participants will be the guests of the Motor Co. at the big new Hotel Cape May until the following afternoon, when the return trip will be made. Thirty-seven acceptances already have been received. The first prize is a handsome solid silver punch bowl, which will go to the owner whose car covers the outward trip nearest to the secret official time. A ball in the evening will be one of the attractive features of the program.

Motor Car Shop Kinks

THE other evening the writer was driving home over macadam roads wet from a heavy thunder shower which had fallen in the afternoon. His car develops 20 horsepower, and in addition to the regular 7-inch headlights it carries a 9-inch swing searchlight which gives as much light as the two headlights combined, and has a longer range. He overtook a car of 40 horsepower or more ambling along at a leisurely 15-mile pace, and honked till the occupants heard him and gave him a chance to get by. Possibly they thought from his lamps that he had a larger car. At all events, they immediately started after him, and presently both cars were going at 35 miles an hour over roads black as midnight. So long as the road was straight, of course the larger car easily held the writer, but presently it became winding. With the searchlight he could explore the curves at full speed, whereas the other driver could not see where he was going. Presently he quit, and under the circumstances his course was highly prudent.

The same generous lighting equipment which enabled the writer to lose a car twice his power adds enormously to the comfort of every-day use where speed is not attempted. When one can see ahead as far as necessary to be sure of safe stopping with a margin added, the nervous strain commonly associated with driving after dark is entirely eliminated, and one can drive substantially as in daylight on any road whose landmarks he knows. There is no undercurrent of compulsion to finish a day's run by dusk, and on hot nights a cooling-off spin needs no assistance from the imagination to make it felt as genuinely refreshing and a prelude to dreamless sleep.

Care of Generator

But like most good things, a price is attached to these blessings. It is true that the price is small—in my case it is represented by the cost of carbide at about 5 cents an hour retail price for all three lamps, and by the necessity of common sense attention to the lamps and generator. But when the writer compares his own case with that of his fellow motorists he realizes that many of them are taking more than their share of trouble with less satisfactory results. For the benefit of such readers, therefore, a few pointers from his experience are given below.

In the first place, no lighting equipment will take care of itself altogether. If the lamps are of the lens mirror type the labor of keeping them optically efficient is limited mainly to occasional cleaning of the lens mirrors and front glass with equal parts of alcohol and water, using a clean, soft rag. The flame deposits a greasy film

Taking Care of the Lighting

on the glass which is not removed by dry wiping or by simple water. Next, the burners themselves must not be allowed to become clogged with soot. This will happen very quickly if the flames are turned low or allowed to die out slowly. They should burn at full height or be extinguished. If the flame shows a tendency to shoot sideways it may be due to a particle of dust which can be dislodged by tapping the burner with a screw driver. If this does not mend matters, blow out the burner with compressed air if convenient, or with gas by momentarily opening the gas valve if a pressure tank is used. This, of course, is only practicable if the hose connection from the pipe to the burner has fabric woven into it to resist the pressure. If it is not convenient to blow out the burner, use a very fine wire, about No. 32 or 34 gauge. A little patience and good light are necessary. A pocket mirror will assist in locating the orifice which cannot be seen directly, or the burner may be given a half turn with the pliers. It should be remembefed that the shape of the beam is the inverted image of the flame, and if the flame is distorted the beam will be distorted likewise; besides this, a distorted flame is liable to crack the lens mirror.

Source of Gas Supply

So much for the care of the lamps themselves. Now for the source of gas. It is perfectly possible to get good results from either pressure tank or generator. The former costs more, but saves the trouble of recharging. Its chief disadvantage is the necessity of exchanging tanks before the charge has all been used, in order to be sure of not being caught on the road without light. If, however, one does not drive much after dark or go far from home, the tank is undoubtedly the most convenient gas supply.

Regarding generators it is hard to make a general statement, as there are so many kinds, some of which give excellent service, while others do not. To be thoroughly satisfactory, a generator should be capable of being turned on and off as required, and of holding the unused carbide indefinitely without material waste. The writer's generator holds 2½ pounds of carbide, and is re-charged in average use about once a week. When run steadily it supplies all three lamps for about 5 hours.

To enable a generator to operate as just described, it is essential that the carbide shall at all times be free from lime. The lime formed by the reaction of the water and carbide has about double the bulk of the carbide whence it was formed, and unless it is sifted out it soon clogs the carbide, and then acts as a water and heat retainer, interfering with the prompt interplay of pressure and gas generation and preventing radiation as well. If the carbide is clean, it will radiate its heat so rapidly that no cooling provision is necessary, but if smothered in lime no cooling provision ever devised will prevent the formation of tarry compounds. Something, therefore, depends on the first selection of the generator.

Idea From the French

There is a succesful French motor cycle generator which feeds water through a graduated needle valve to the carbide beneath. This carbide is supported by a perforated false bottom which is pressed upward by a spring. The carbide is held snugly between this false bottom and the bottom of the water tank, and the lime is shaken through by the jarring of the motor cycle. This arrangement serves its purpose excellently, the carbide being always clean; but on a motor car something more than the motion of the car is required to overcome the clinging tendency of the lime. The writer has seen generators mounted on springy brackets on the running board, which by their own vibration kept the carbide clean. There are, however, generators made containing special sifting devices, which will work reliably on even the smoothest-running car.

The best generator made will not give good results if the piping is improperly arranged, or if reasonable care is not taken to keep the water drip and gas outlets clear. Occasionally—once or twice a season—the writer has noticed his lamps burning dim when the water tank is full and the pressure is known to be correct. The next day he disconnects the hose from the gas outlets and runs a bicycle spoke through; he also detaches the bottom half of the generator, pulls out the filtering hair, and runs the spoke up to meet the outlets. Then he puts a short piece of tubing on one outlet, closes the other and blows through. The passages are then clear for several months. His own generator has valves on the gas outlets, and an occasional drop of oil or kerosene keeps the valves from sticking.

Arrangement of Piping

The arrangement of the piping is as important as the selection of the generator, if not more so. There is a certain amount of moisture in the gas, which in cold weather condenses, most of it within a few inches of the generator outlet, and this water must be cared for in some way. If no provision is made for it, it will col-

lect in the lowest point of the tubing and cause the unbearable flickering often seen. The correct arrangement is to have the hose from the generator outlet lead directly downward to the lowest point of the piping system, and to put here a trap or dead end of pipe large enough to hold two or three spoonfuls of water. In other words, the pipe at this point may resemble a letter T laid on its side, with the bottom branch of the T closed. The gas enters from the generator by the upper branch of the T, and the pipe forming the main stem should slant upward for some distance to cause moisture in it to drain back to the dead end just mentioned. The moisture in the dead end will evaporate between runs.

The piping should be brass pipe ¼-inch inside diameter. Temporizing with the small copper tubing so often used leads to nothing but vexation. Such tubing is so soft that it sags between supports, forming pockets in which moisture collects to cause flickering. It has been even known to break from vibration. Besides this, the copper reacts with the acetylene to form a black scale which in time—and sometimes rather rapidly—clogs the tubing. This clogging appears to be hastened by moisture, and is especially marked at the ends of the tube. The scale is explosive. and is sometimes detonated when rubbed with a file or struck with a hammer. The writer has not heard of any injuries being caused in this manner, as the quantity of explosive is so small, but, as already mentioned, the copper tubing is objectionable on other grounds.

When the Lights Are Dim

In case the lights burn dim, the cause may be found in a gas leak or in stoppage of the drip or gas outlets. If the generator is automatic, it will make gas fast enough to take care of a small leak, and the effect will be seen only in excessive carbide consumption. The leak, if any, may be treated with a match—care being, of course, taken that there is no free gasoline about. If the generator has a wick feed a leak will cause the lights to burn dim. A gas bag is not really necessary if the piping is arranged as above described, but if a bag is used its distension will indicate whether the gas pressure is at fault. If there is a stoppage in the pipe line—which should be inexcusable with proper piping—it is easily tested by disconnecting both ends and blowing through. Incidentally it may be remarked that since leaks seldom occur except in the rubber connections, they may be practically eliminated by using fabric hose of proper size to fit the tube and gas ends.

The accompanying sketch shows one of several ways of arranging the piping near the generator. If both headlights and searchlight are supplied from one generator, a gas valve should be inserted in the searchlight line as the drawing shows, so that the searchlight can be cut out when not needed. If the generator outlets are provided with gas valves, these will serve the purpose. If the generator has two outlets, one may be used for the headlights and the other for the searchlight, or one may be plugged, as the drawing shows, and the other used for all three lamps. The upward slope of the pipes toward the lamps should be particularly noted on account of its importance in securing proper drainage. The screw cap on the dead end may never need to be removed, but if it is removable it should be made gas-tight with red lead, shellac or leather packing.

Leak That Is Not a Leak

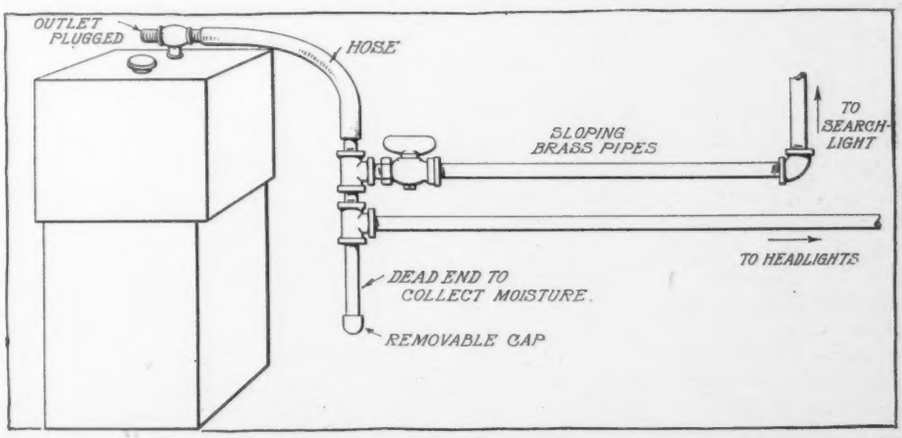
Carbureters of the so-called puddle type require much more accurate adjustment of the float valve than spraying carbureters. Occasionally the owner may find that to secure engine flexibility at low speeds without making the mixture over rich at high speeds, the float level has to be raised as high as the construction permits, i. e., till the puddle almost overflows the drip tube. This gives a good mixture at low speeds with a small opening of the needle valve, but the margin of buoyancy —as it may be called—of the float is so small that the puddle may very easily arise and overflow the drip tube when the engine is not running. This is not due to the valve leaking in the sense of being an imperfect fit on its seat, neither is it due to the gasoline level being too high under working conditions. It is due simply to the fact that a certain amount of pressure is required to hold the valve firmly on its seat, and this pressure can only come from the gasoline around the float rising somewhat higher than its normal level, and thereby exerting a lifting action on the float. If the gasoline cannot rise sufficiently before overflowing, the carbureter will drip continuously when the engine is at rest, necessitating that the main valve be closed every time that the engine is stopped. This difficulty is not encountered with spraying carbureters, owing simply to the fact that the gasoline rises by capillary action in the spray jet considerably above the level of the liquid surrounding the float. Hence, if the float in the spray type is adjusted to give a bead of gasoline at the tip of the spraying jet the actual level in the float chamber may be ⅛ or even ¼-inch lower. In some carbureters the bore of the stand pipe terminating in the nozzle is made considerably larger than the nozzle orifice itself in order to eliminate friction, and in these carbureters the float level must be correspondingly higher before the bead makes its appearance.

REO WINS ROADABILITY

Harrisburg, Pa., Aug. 2—S. E. Keeney's Reo was the winner of last week's roadability run of the Motor Club of Harrisburg, to Mount Holly Springs and return, a distance of 52.6 miles. The official time was 3:37:28, and Keeney was nearest with 3:40:25. S. H. Bomgardner, Maxwell, was second with 3:32:35, and Joseph Pomraining, Oldsmobile, third with 3:31:08. Mayor Meses selected the time, choosing at random one of five envelopes, which called for a 14½-miles-an-hour schedule. A feature of the run was the duel between the Woods and Columbus electrics, the former of which is returning from a cross-state tour of Pennsylvania. George W. Daley, who drove the Woods to its recent long-distance record from Philadelphia to Atlantic City and return, was at the wheel, and covered the distance in 3:21:36. The Columbus' time was 3:46:19. But one accident, and that not serious, marred the run—William Dare's Inter-State car bucking a telegraph pole at a right-angle turn. Although the car was badly smashed about the front, none of the occupants were scratched.

DIVIDEND BY E-M-F.

Detroit, Mich., Aug. 2—In the short intervals between the purchase of several factories as reported last week, the E-M-F company found time—and the surplus—sufficient to declare a 40 per cent dividend on its stock July 25. That date marks the first birthday of the E-M-F company. In declaring this first dividend —half of which is in stock and the other half in cash—the E-M-F company first reserved sufficient funds for all its needs, among which is $100,000 to pay for the addition now being built to the plant in Piquette avenue.



SEVERAL WAYS OF ARRANGING PIPING NEAR GENERATOR

Among the Makers and Dealers

SHOWING RECENT ADDITIONS MADE TO SPEEDOMETER PLANT OF STEWART & CLARK MFG. CO. OF CHICAGO

Doubling Size of Plant—Gray & Davis, lamp makers, have decided to double the size of their plant at Amesbury, Mass.

Increases Capital Stock—The Simplex Motor Car Co., of Mishawaka, Ind., has filed with the county recorder notice of $200,000 increase in its capital stock, doubling its present capitalization.

Levy Sells Out—George B. Levy, vice-president and general manager of the Standard Automobile Supply Co., of Chicago, has sold his entire holdings to L. I. Bregman & Co., of Chicago. L. L. Halle has assumed the position of general manager of the concern.

Harwood An Outside Man—K. B. Harwood, who, as manager of the Philadelphia branch of the Fisk company, has popularized those tires in the Quaker city and vicinity, will hereafter devote his energies to special outside factory representative business for the company. He will be succeeded in the management of the Philadelphia branch by A. L. Bolster, who has been connected with the Chicopee Falls factory for the past 10 years.

White Deal In Baltimore—The White Garage Co., Park avenue and Biddle street, has been bought out by the White Automobile Co. The new concern will continue as the local representative for the White steamer with temporary headquarters at the present site. The firm, however, has secured a lot on which it proposes to erect a modern new two-story garage, with show rooms, shop, etc. The officers of the new company are: H. M. Rowe, president; J. S. Detrick, vice-president; L. T. Appold, secretary-treasurer; F. W. Darling, manager, and Lee W. Tremblay, sales department.

Taxicab Company Building—The Pittsburg Taxicab Co. has taken out a permit for a $12,000 building at Centre and Negley avenues.

Adopts Dow Rim—The Hartford Rubber Works Co. has adopted the Dow standard rim, which is to be marketed in connection with Hartford tires and kindred products.

Another Empire Branch—The Empire Tire Co., of Trenton, N. J., has opened a Philadelphia branch at Broad and Wood streets, with E. B. Richardson, formerly connected with the company's sales force, as manager.

Opens Philadelphia Office—The Cutler-Hammer Mfg. Co., of Milwaukee, maker of electric controlling devices, announces the opening of a Philadelphia office in the Commonwealth building. An engineer specially qualified to advise regarding the control of electric motors will be in charge of the ne woffice.

Parry Secures a Plant—A 3 years' lease on the plant of the Standard Wheel Co. in Indianapolis has been taken by the newly organized Parry Automobile Co., of which David M. Parry, formerly president of the Parry Mfg. Co., is the head of the concern. It is expected that the machinery will be installed and the plant ready for operation about September 1, and ultimately 2,000 men will be employed. The plant was the first home of the Overland Automobile Co., the Overland having first been manufactured by the Standard Wheel Co. The plant has been abandoned for some time.

King Company Moves—The King Leather Tire Co., of Milwaukee, Wis., is in its new quarters at 3417-3419 Vliet street. The change was necessary on account of large volume of business.

Reo Agent Moving—C. L. Taylor, who recently took the Kansas City agency for the Reo, has made arrangements to move into new quarters at 1612-14 Grand avenue, where he will have considerably more space than was available at his former garage on Fifteenth street.

Big Order Received—The Rider-Lewis Automobile Co., of Anderson, Ind., has received an order for 1,125 of the 1910 models from the H. J. Koehler Sporting Goods Co., of New York city. Clermont Rider, secretary of the Anderson company, obtained the big order, and as soon as the removal to the Anderson plant is completed, a double shift of workmen will be employed.

Packard Branch for Hartford—A branch of the Packard Motor Car Co. will be established in Hartford, Conn., in the very near future. Milton J. Budlong, president of the Packard Motor Car Co., of New York, is authority for the statement. The location of the new branch has not as yet been decided upon, but it is said that if a good rentable site cannot be secured the Packard company will build. Budlong and other representatives of the Packard interests were in Hartford last week making the necessary arrangements. It is under-

stood that R. B. Sloan of the New York branch will be installed as manager of the Hartford branch.

Jewell Agency Locates—The Pittsburg agency for the Jewell car will be located in the Banker Automobile Palace block on Baum street.

Reading Service Enlarged—Reading, Pa., is soon to have an addition to its present taxicab service, a new company having recently been formed which will use the air-cooled Middleby chassis upon which will be mounted a cab body.

Nothstine Succeeds Blake—E. W. Nothstine has succeeded H. M. Blake as St. Louis manager of the Buick Motor Co., Blake having gone to Chicago with the Parlin-Orendorff Co. Nothstine has been general representative in the southwest for the Buick company.

Busy Making Ball Bearings—The New Departure Mfg. Co., manufacturer of Two-in-One annular ball bearings, is working its factory at Bristol, Conn., to its utmost capacity to fill orders. Day and night shifts are employed, and the factory is running 22 hours daily. New machinery of special design is being added to the plant constantly.

Will Make Engines—The General Motors Co. is building a structure at Flint, Mich., which will house another motor industry. The building will be 800 by 360 feet and will be devoted exclusively to the manufacture of gasoline engines. Three thousand men will be given employment. It is expected that the building will be ready for the installation of machinery by October 1.

New York Concern Moves—The Franco-American Taximeter Co. has moved to spacious quarters on Seventh avenue, at Forty-ninth street, New York city. From this point the company will direct the handling of all its business which has hitherto been in charge of Lavalette & Co. as rental agents. In the new building are extensive repair shops and a garage, which are calculated to care for the fast-increasing business in satisfactory manner. The Franco-American Taximeter Co. has branches in Boston, Washington, D. C., Chicago, San Francisco and New Orleans.

Wisconsin Events—George Pregler, Jr., of Madison, Wis., is building a large public garage and repair shop on West Johnson street. The dimensions are 30 by 120. It will be of brick construction, one-story high. Articles of incorporation have been approved in Wisconsin of the Ogden-Farwell Garage Co., of Milwaukee, Wis. The incorporators are George F. Gerlach, J. M. Dorsey, and A. C. Runkle. Andrew Reis of Green Bay, Wis., has been appointed district agent for northeastern Wisconsin of the Moline. Robert Raymond of Eau Claire, Wis., for several years foreman of the repair department of the Tanberg Auto Co., of that city, has opened a repair shop and garage at Bloomer, Wis. Ground has

BREAKING GROUND FOR GREAT WESTERN PLANT

been broken for the new addition to the plant of the Federal Rubber Co., of Milwaukee, at Cudahy, Wis.

McCurdy Locates—The McCurdy-May Co., which lately secured the agency for the Pierce-Arrow in Pittsburg territory, has taken headquarters at Baum and Euclid streets.

Whitcomb Darracq Agent—Charles G. Whitcomb has closed a deal whereby he takes the agency for Darracq cars in Massachusetts and Rhode Island, with his headquarters in Boston. This is his first venture in the motor business. The office of the concern will be located on Boylston street, in the heart of motor row.

Wisconsin Happenings—The Cook-Buchanan Co. of Lake Mills, Wis., has erected a two-story garage on Main street, Lake Mills, for the use of Seaver & Gericke, a new agency, repair and garage concern. The W. L. Hibbard Motor Car Co., Milwaukee, Wis., state agent for the Chalmers-Detroit, Hudson and Thomas lines, has moved into its new garage on Wells street, between Third and Fourth streets. Herman Heller and P. F. Dolan of Shawano, Wis., have purchased the Mehlhorn building on Main street and opened a garage under the name of the Heller & Dolan Automobile Co.

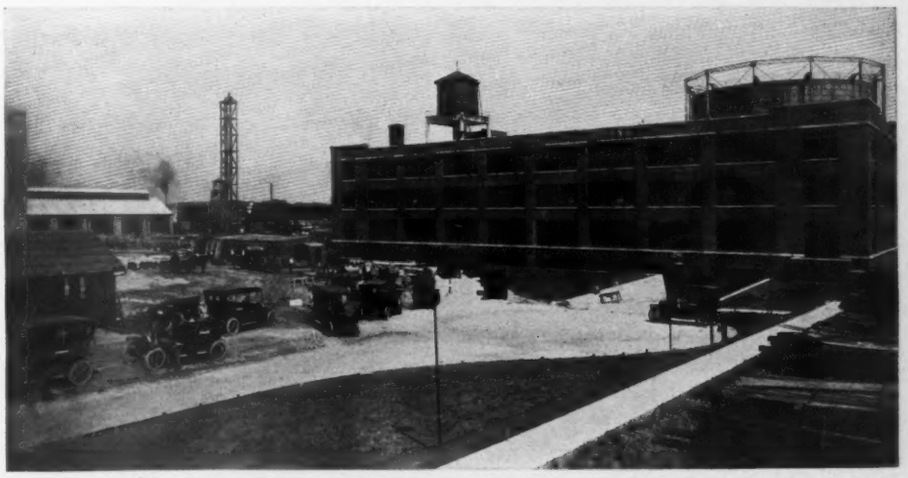
Opens Branch House—The Standard Automobile Co., of Washington, Pa., in which J. N. Jolliffee of Uniontown, and H. H. Tanner of Washington, Pa., are principal owners, will establish a large branch house at Fairmont, W. Va., and will have the agency for the Peerless, Mitchell and Baker electric cars.

Made a Sales Branch—The Indianapolis Buick agency, which has been operated as an agency by the Buick-Losey Co., will be a sales branch of the factory in the future, the Buick Motor Co. taking over the Indiana business. R. H. Losey, who has been president of the Buick-Losey company, becomes manager of the sales branch.

E. P. Blake Moves—E. P. Blake, who has the wholesale agency for Jackson and Fuller cars in New England with headquarters at Boston, has closed his downtown headquarters on Hawkins street and moved to Boylston street, where he is in the heart of the motor section. A change in the retail agency for the cars in Boston is under consideration.

To Sell American Simplexes—N. S. Gotschall, manager of the Studebaker branch in Minneapolis, Minn., has resigned to take the general sales agency of the American Simplex, two-cycle car, manufactured in Mishwaka, Ind. Mr. Gotschall takes control at once and it is expected that he will establish headquarters in Chicago for the disposition of the complete factory output.

Bergers Again in Harness—John W. Bergers of the Bergers Automobile Co. of Omaha, who has recently retired from the retail end of the motor car business, has completed arrangements for a new company to be known as the Western Automobile Sales Co., with offices and warehouses in Omaha and Kansas City. The company will have a paid up capital stock of $50,000 and will do an exclusive wholesale business. The main offices will be located in Kansas City and will be managed by Mr. Bergers. The Omaha office will be



GENERAL VIEW OF VELIE PLANT AT MOLINE, ILL., WITH CARS READY FOR SHIPMENT

TESTING TRACK OF MAXWELL-BRISCOE COMPANY AT NEWCASTLE, IND.

managed by his brother, N. P. Bergers, who has until recently been in the business in Harlan, Ia.

Rice Gets More Room—Extensive improvements are being made to J. A. Rice's garage, agent for the Welch in Baltimore. About 2,400 square feet of the space which was formerly used for storage purposes is being converted into a show room.

Will Make Solid Tires—The Emergency Auto Tire Co., of South Bend, Ind., has filed articles of incorporation with the secretary of state and expects within the year to erect a large factory building. The tire is of solid rubber cushioned to make the best results. The company is capitalized at $25,000.

Partnership Dissolved—Notice is given that William C. Schoelkopf and H. C. Biddison, co-partners, doing business under the firm name and style of the Schoelkopf Mfg. Co., of Madison, Wis., have dissolved partnership. Biddison has purchased the entire interest of W. C. Schoelkopf and will continue the business as the Biddison Mfg. Co.

No Longer Packard Agents—Brown, Thomson & Co., for the past few years representatives of the Packard at Hartford, Conn., no longer have that agency. The firm will continue with the Stevens-Duryea and the Cadillac and possibly some other make of high-priced car will be added to the line later on. Just what arrangement will be made by the Packard contingent as regards local representation is not known.

Fidelity Company Started—J. Frank Waters, who has been connected with the Monitor Automobile Works as general manager and designer of its commercial cars and solid tire wheels, has severed his connection with that firm and has incorporated the Fidelity Motor Car Co., for the purpose of building 1-ton commercial trucks and light delivery cars. R. S. Stephens, until recently sales manager of the Randolph Motor Car Co., is secretary and sales manager of the new concern. The office of the company is in the Edgcomb building, Washington and Clinton streets, Chicago.

Kansas City Show Dates—The date for the Kansas City show has been set for the second week following the Chicago show.

Bankers Take on Lozier—The Banker Brothers Co., of Pittsburg, has signed up for the exclusive agency of the Lozier car and will handle western Pennsylvania territory.

Another E-M-F Purchase—Following the purchase of the de Luxe factory at River and Clark streets, Detroit, it is now announced that the E-M-F company has purchased the entire property of the Western Malleable Steel and Forge Co., adjoining the de Luxe property. This plant originally devoted to the making of malleable steel castings, has during the last 3 years followed the trend of demand and gone into the drop forging line on a large scale. It is understood the consideration was about $300,000.

Mezger Secures Injunction—The C. A. Mezger department of the United Manufacturers, announces that it has secured an injunction against the New York Sporting Goods Co. in the circuit court of the United States for the southern district of New York, restraining the New York concern from selling imitations of the Automatic windshield, which is claimed to be a direct infringement upon the patents purchased by the Mezger people when they took over the business of the Conover windshield.

Kansas City Doings—The Midland Motor Car Co., of Kansas City, Mo., has taken the local agency for the Chalmers-Detroit. H. B. Clarkson, formerly manager of the Midland company will hereafter devote his time to the Pierce-Arrow cars, handled by the Dey Motor Car Co. C. L. Taylor, agent for the Marmon and Regal, has added two new lines in the Reo agency, beginning July 1, and the Herreshoff. The Reo agency was formerly held by the Missouri Valley Co., which will in the future devote its time to the White line of steamers and gasoline cars and the Premier line, while the Herreshoff is a new arrival in Kansas City.

Monsen Places Big Order—Adolph Monsen, of Chicago, has contracted for 150 Marion cars for 1910. His garage is at 329-331 North Clark street.

New Tiffin Enterprise—The Hertz Electric Co., of Chicago, has leased the Jackson underwear factory on Washington street, Tiffin, O., and will manufacture magnetos and electrical equipment for motor cars. Sixty hands will be employed.

Change of Name—Hall Brothers, Cartercar and Plymouth truck agents in Cleveland, O., have become the V. R. Hall Automobile Co., A. W. Hall, the other member of the firm, having gone to Plymouth, O., to take charge of the Plymouth truck factory. The V. R. Hall Automobile Co., under the management of V. R. Hall, will continue to sell the Cartercar and Plymouth machines as before.

Form a Tire Company—Robert S. Knepper, J. E. Todd, Cornelius Mead, R. F. Rarey and D. G. Bonham last week incorporated the Cleveland Puncture Proof Tire Co. of Columbus, Ohio, with a capital stock of $20,000. The company owns a number of patents of a puncture-proof tire which has been tested for 2 years. They have been manufactured by a large eastern concern, but now it is proposed to erect a factory in Columbus. Mr. Knepper will be president of the corporation.

Building Another Big Garage.—M. H. Gulesian, who built the Copley square garage in Boston, has now purchased 50,000 feet of land in Cambridge, just across the Charles river from Boston, upon which he will have erected another mammoth garage and repair shop. When completed it will be one of the largest in the country. Each concern having quarters there will have its own entrance and exit, its own elevator, lighting and heating plants just as if it were a private garage of its own. The first section to be finished will be occupied by A. P. Underhill, Boston representative

of the Knox, on a 10 years' lease. The main office and salesroom of the Knox will remain in Boston.

Parry Organization Completed—Organization of the Parry Automobile Co. at Indianapolis has been completed and the company has been incorporated with $1,000,000 authorized capitalization. The first Parry model will be forthcoming about August 20.

New Spoerer Ready—The Carl Spoerer Sons' Co., of Baltimore, manufacturer of the Spoerer car, has completed its 1910 model, for which it has orders for twenty-five cars. The Spoerer company's demonstrating car is a 30-horsepower machine. In a few weeks the 50-60-horsepower model will be ready. Last year only the high-power car was made.

Walls Goes to Chicago—W. L. Walls, who went to St. Louis three months ago from Kansas City and assumed the management of the Maxwell branch there, has resigned and will go to Chicago. Frank R. Tate, for several years manager of the St. Louis branch of the Goodrich Tire Co., will succeed Mr. Walls as manager of the St. Louis branch of the Maxwell.

Invades Residence District—In order to give his son Roy employment, John S. Lazaraus, a well known Indianapolis business man, has erected a garage in the exclusive north side residence district, believing that the convenience of the location to owners, will attract considerable patronage. The building is of concrete and is built with a truss roof, not requiring posts. Heretofore Indianapolis garages have been confined to the business districts.

Electric Truck Performance—One of the best runs ever recorded for an electric truck was made from Boston last week when one of these vehicles made a trip from the Hub to Magnolia, a distance of 78 miles, carrying a load of furniture. It was done in the ordinary course of business without any attempt to make a record. Another notable run was made by Mrs. Day Baker in a Columbus electric when she motored from Boston to Newport, a distance of 76 miles, climbing several hills on the way, and doing it on one charge of batteries.

McKeen Business Growing—The McKeen motor car shops, which manufacture the McKeen gasoline motor, must find new quarters, as the demand for the McKeen motor car demands increased facilities and space. Already the plant has doubled its output, but the location of the factory in the Union Pacific shops grounds does not afford room for expansion. The McKeen company will shortly take up the manufacture of special and private motor cars for hunting parties. The hunting cars will be fitted with berths and a culinary department. Gasoline locomotives for switching cars around manufacturing plants will also be manufactured. The proposed expansion of the company has brought a number of offers from other cities to secure the location of the plant. Council Bluffs and Indianapolis are among the principal cities which are trying to take the shops away from Omaha.

C. E. Davis Resigns—C. E. Davis, superintendent of the American Locomotive Co.'s plant at Providence, R. I., has resigned his position and gone west.

Tyler Buys Property—Manager Frank J. Tyler, of the Boston branch of the Maxwell-Briscoe company, surprised the motor colony of the Hub last week by purchasing at private sale the Kenney & Clark property on Massachusetts avenue, paying more than $300,000 for it. The property comprises a four-story building and a large lot of land centrally located. Mr. Tyler purchased it individually for himself. He will move the Maxwell branch there when alterations which he has planned are completed about November.

Will Make Business Wagons—Motor trucks and delivery wagons will be manufactured by the Muncie Motor Truck Co., which has been organized at Muncie, Ind. It has not been decided whether the factory will be located in Muncie or Yorktown, a suburb a few miles west of that city. Those interested in the concern are D. O. Skillen, a glass manufacturer of Yorktown; Hugh and T. L. Warner, manufacturers of motor parts, Muncie, and Milton E. Ailes, vice president of the Riggs National bank, Washington, D. C.

Western Events—The Western Automobile Co., recently organized, with temporary headquarters in the Brandeis building, Omaha, has taken the agencies for the Great Western and Victor cars. The Omaha Automobile Co., Omaha agents for the Auburn, has added the Rider-Lewis to its line. H. G. Kirkland, formerly a dealer in Overland cars at Kansas City, has been appointed traveling representative of the same factory with western Missouri and Kansas as his territory. W. R. Dempster will soon open a garage at 1316 Oak street, Kansas City, and is now looking for an agency for this territory. The C. L. Taylor Motor Car Co. of Kansas City, has leased the building at 1612 Grand avenue, formerly occupied by E. P. Moriarity.

Traveling for Stearns—R. H. Williams has joined the ranks of the F. B. Stearns Co., and will represent it on the road in the southern section of the country.

Thomas Branch for Boston—A change has been made in the Thomas agency in Boston. C. S. Henshaw is now in charge there and the agency will be conducted as a branch house. Mr. Henshaw was the first man to handle the Thomas in Boston and later it was taken care of by Harry Fosdick.

Engine Plant Expanding—The Davis Mfg. Co., Park and Fifteenth avenues, Milwaukee, Wis., builder of motors and parts, has taken out a permit for the erection of a $12,000 addition to the factory. The company last year erected large works at Park and Fifteenth avenues and abandoned the plant on Sixth street, but the new quarters already are too small.

Breaks Ground at Peru—The Model Co. has broken ground for the erection of its new plant at Peru, Ind., where Great Western cars are made. The affair was a gala one, the entire town turning out. The formal presentation of the deed and abstract to the ground was made by R. A. Edwards, president of the Oakdale Improvement Co., the acceptance being made by E. Mack Morris, general manager of the Model company.

Studebaker in Indianapolis—Work on the new six-story Studebaker salesroom and garage in Indianapolis is progressing rapidly and will be ready for occupancy within a few weeks. The Studebaker Brothers' Co. of Indianapolis has just been organized with Frederick S. Fish as president and Frank Staley as vice president, treasurer and general manager. The concern will handle the Studebaker-Garford, Studebaker E-M-F, and Studebaker-Flanders products, as well as horse-drawn vehicles, harness and accessories.

ST. LOUIS CAR CO.'S STANDARD SIX READY FOR A ROAD TEST

Brief Business Announcements

Trenton, N. J.—The Saurer Motor Trucks Co., of West Orange, has been incorporated with a capital stock of $200,000.

Indianapolis, Ind.—Articles of incorporation have been filed by the Henderson Motor Sales Co., with a capital stock of $10,000.

Kansas City, Mo.—The Moon Motor Co. has opened a new garage at Thirtieth and Main streets, and in the future will make its headquarters there.

Waco, Tex.—Orand & Willig, of this city, have just closed a contract with the Southern Motor Car Co. to represent the Dixie car in central Texas.

Chicago—The Hart Motor Car Co. has been incorporated with a capital stock of $10,000. Fred. P. Hart, L. A. Shadburne and H. F. Spengler are named as the incorporators.

Reading, Pa.—V. MacFulton, of Philadelphia, who has been acting as secretary for the Penn Auto Supply Co., has resigned his position and is to enter into another line of business.

Connersville, Ind.—Ground has been broken for the erection of a new plant to be devoted to the making of motor car engines. E. W. Ansted and E. L. Russell are interested in the new company.

Cleveland, O.—The F. B. Stearns Co. has commenced work on the erection of its new buildings to be put up on the land recently purchased by the concern, and the new structure is to be completed by October 1.

Albany, N. Y.—A new company is the Hudson River Garage Co., which has a capital stock of $50,000, and which will deal in repair and rent motor cars. A. F. Moran, Allan Lane and William Bull are the incorporators.

Augusta, Me.—The Smith-Rolfe Co., of Portland, has been incorporated with a capital stock of $25,000, to manufacture and deal in motor cars, motors, etc. The incorporators are J. H. Pierce, who is the president of the concern, and J. H. Ridge, treasurer.

Indianapolis, Ind.—The Buick Motor Co., a Michigan corporation, has applied for permission to do business in this state with a capital stock of $2,500,000, and proposes to use $10,000 in its Indiana business. R. M. Losey, of 130 East New York street, is to be the local agent.

Poughkeepsie, N. Y.—The Fiat Co. of New York has been incorporated with a capital stock of $2,000,000, to manufacture the products of the Fiat company, of Turin, Italy, including airships, watercraft and motor cars, Elmer R. Hollander, Joseph A. Strauss, A. E. Schaaf, Sol K. Lichtenstein, and W. F. Ashley, Jr., and Henry M. Wise, all of New York city, and Henry Neubauer, of New Rochelle, are the incorporators.

Denver, Colo.—The Colorado Auto-Lite Co. has been incorporated with a capital stock of $500, by W. J. Pette, J. E. Fry and J. W. Foster.

Rushville, Ind.—A movement is under way to induce a motor car company to locate its plant in this town. In all likelihood the town would be willing to give a bonus to the new company.

Pittsburg, Pa.—D. A. Dyche has been awarded the contract for the erection of the new garage which is to be built by Arthur E. Pitcairn on Center avenue. The new building is to cost $20,000, and is to be completed about October 1.

Brooklyn, N. Y.—The H. J. Koehler Co. has just concluded arrangements with the Hupp company, of Detroit, whereby his concern is to be the eastern distributor for the Hupmobile. The salesrooms on Livingston street are to be retained.

New York—The Sharpe Tire Protection Co., of Brooklyn, has been incorporated with a capital stock of $150,000, to control and grant licenses to patents of G. W. Sharpe, relating to motor cars, etc., to construct wagons, carriages, motor cars, motor boats, etc. The incorporators are G. W. Sharpe, William S. Hurley, S. S. Whitehouse, all of Brooklyn, N. Y.

Paterson, N. J.—Auto Express Co., capital stock $150,000. Incorporators, S. Venema, P. Van Riper and J. Van Hook.

South Bend, Ind.—Emergency Auto Tire Co., capital stock $25,000. Incorporators, C. M. Culp and A. J. Kroencke.

Palmyra, N. Y.—Garlock Auto Specialty Co., capital stock $10,000; to manufacture, repair and deal in air-purifying devices for carbureters, engines, gas and gasoline, and attachments of all kinds used in connection with motor cars. Incorporators, O. J. Garlock, H. E. Whiting and S. D. Van Alstine.

Chicago, Ill.—Hart Motor Car Co., capital stock $10,000; to deal in motor cars and accessories. Incorporators, L. P. Hart and H. F. Spangler.

Boston, Mass.—Bi-Motor Equipment Co., capital stock $50,000; to engage in the manufacture and sale of motors. F. A. Putnam is to be the president, and J. V. Wilson treasurer.

Boston, Mass.—Copley Motor Car Co., capital stock $25,000; to do a general motor business. J. E. Lowell, of this city, is to act as president and treasurer.

Portland, Me.—Smith-Rolfe Co., capital stock $25,000; to manufacture and deal in motor cars. Incorporators, J. H. Pierce, who is to be president, and J. H. Ridge, treasurer.

East Orange, N. J.—Universal Auto Co., capital stock $50,000; to manufacture motor cars, cabs, vehicles, wagons, trucks, etc. Incorporators, P. Osborne, H. B. Ludlum, and W. H. Brearley.

Chicago, Ill.—Speed Sales Co., capital stock $40,000; to deal in motor cars and accessories. Incorporators, A. W. McGovern, F. C. Rathje and H. C. Calhoun.

Chicago, Ill.—Siegmund-Baylies Co., capital stock $40,000; to repair motor vehicles. Incorporators, O. S. Baylies, E. H. Arnold and A. C. Noble, all of Chicago.

Pittsburg, Pa.—A new garage and salesroom for the Jewell is shortly to be opened in the Banker Brothers' block on Baum street. The names of the new agents have not yet been announced.

Rome, N. Y.—W. J. Doyle, who is the owner of the former Bingham block on South James street, has decided to erect a garage there. The new building is to be a two-story and basement structure.

Wilmington, Del.—Grantley P. Postles has been appointed agent for the Chalmers-Detroit car and is now settled in his new headquarters on the ground floor of the DuPont building, on the Market street side.

New York—Thomas Forbes, eastern representative for the American Motor Sales Co., has established new headquarters at 1776 Broadway, where both the American and Pope-Toledo cars are to be on exhibition.

Philadelphia, Pa.—The Quaker City Cab Co. and Taxicab Service Co. are to commence the erection of a four-story concrete garage at 1207-1217 Vine street. It is to cost about $125,000, and will have a frontage of 93 feet, with a depth of 140 feet.

Albany, N. Y.—Articles of incorporation have been filed by the Economy Distributing Co., of New York city, with a capital stock of $15,000. The company is to engage in the manufacture of motor cars and accessories. The incorporators are A. W. Rosen, Isaac Cohen and Aaron Benjamin.

Knightstown, Ind.—A change in the ownership of the Columbia Electric Co., maker of the Leader car, has taken place. Moses Vandenbark has sold his stock to Luther and Earl Frost, of Greenfield, and Lon Thomas, of Willow. The new owners are planning an increase in the capacity of the plant.

Atlanta, Ga.—The Mitchell is to be represented in this city by R. C. Howard, president of the Howard Safe and Vault Co., of 91 Pryor street, who has secured the state agency, with the exception of Chatham, Richmond and Muscogee counties. It is understood that the garage and agency is to be located at 88 Pryor street.

Hamilton, O.—The Imperial Motor Car Co. has been incorporated with a capital stock of $500,000, and work is to be commenced at once on the erection of a plant. Charles U. Carpenter, of the Herring-Hall Marvin Safe Co., George A. Rentschler, manufacturer of engines, and George H. Helvey, inventor of the Corliss engine, are the backers of the new company.